

Stephen M. Pizer
Curriculum Vitae

PERSONAL

Born 4 October 1941, Boston, Massachusetts
U.S. citizen, married, two children

EDUCATION

Ph.D. Harvard University,
 Computer Science, 1967

A.M. Harvard University
 Computer Science, 1964

A.B., Sc.B. Brown University,
 Applied Mathematics, 1963

TEACHING AND RESEARCH EXPERIENCE

University of North Carolina at Chapel Hill

Department of Computer Science

Kenan Professor, 1992 –
Professor, 1982- 1991
Associate Professor, 1971-81
Assistant Professor, 1967-71
Assistant Chairman, 1979-81

Biomedical Engineering

Faculty Member, Curriculum, 1975- 1991
Adjunct Professor, Department, 1991 -

Department of Radiology, School of Medicine

Adjunct Professor, 1982-
Adjunct Associate Professor, 1975-1982

Department of Radiation Oncology, School of Medicine

Adjunct Professor, 1988-

UNC Medical Image Display & Analysis Group, from 11 UNC Depts.

Head, 1974-

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UNC Imaging Task Force Committee

Chair, 2002-

UNC Lineberger Comprehensive Cancer Center

Center Member, 1993-

Rijksuniversiteit Utrecht, Netherlands

Visiting Professor of Medical and Physiological Physics, 1983-1984, 1992

Massachusetts Institute of Technology

Visiting Guest Lecturer, July 1970, July 1971, July 1972, July 1973 July 1975, July 1976

Institute for Graphic Communication

Course on Three-Dimensional Display Techniques, May 1982

American Association of Physicists in Medicine

Summer School on Physics of Nuclear Medicine, July 1983

Leaves

August 1973 - August 1974 University College London, topic: medical image display and restoration

August 1983 - August 1984 University of Utrecht, topic: human vision research

January 1992 - August 1992 University of Utrecht, topic: object shape

January 2000 - May 2000 Harvard, Yale, Johns Hopkins, topic: medial modeling of objects

NATO ASI, Faculty

Pictorial Information Systems in Medicine, 1984

The Formation, Handling and Evaluation of Medical Images, 1988

Faculty, 3D Neuroimaging: Theory and Clinical Applications, Johns Hopkins Medical Institutions,
October 1990

Conference tutorials

Visualization in Biomedical Computing, *Cores*, 1994; *Scale Space* (with B. ter Haar Romeny), 1996

Medical Image Computing and Computer Aided Interventions, *Object Shape* (with C. Taylor, T. Cootes), 1998

EMPLOYMENT (non-teaching)

Department of Medical Physics, University College Hospital Medical School, London, England

Visiting Research Fellow 1973-74

Physics Research Laboratory, Massachusetts General Hospital

Research Fellow in Radiology, 1973-1975

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Research Fellow in Medicine, 1967-73

Applied Mathematician and Computer Science Researcher, Summers 1962-67

John Hancock Life Insurance Company

Actuarial Trainee, Summers 1959-61

CONFERENCE BOARD AND PROGRAM COMMITTEE MEMBERSHIPS

Banff International Research Station Workshop on Geometry for Anatomy, Co-organizer, 28 August- 2 September 2011

Medical Image Computing and Computer-Assisted Intervention, Board 1992-2004

CVPR - Program Committee Biomedical Image Analysis Workshop, Technical Committee, 1994

Conference on Visualization in Biomedical Computing, Atlanta, Technical Committee, 1990, 1994, 1996;
Conference Chairman, 1992, Board, 1994, 1996

IEEE EMBS Conference, Workshop on Advanced Medical Image Processing, Rennes, France, 1992

NATO Advanced Research Workshop on 3D Imaging in Medicine, Travemünde, Germany, Co-chairman, 1990

Chapel Hill Workshop on Volume Visualization. Program Committee, 1989

SPIE Symposium on Medical Imaging, 1987-1989; Subconference on Image Capture & Display; 1990-??;
Subconference of Image Processing, 1990-

ACM Workshop on Interactive 3-D Graphics, Program Co-chairman, 1986

Computer Assisted Radiology International Symposium and Exhibition, Program Committee, biyearly 1987-

IEEE Int. Joint Alpine Symp. on Med. Comp. Graphics and Image Commun. and Clin. Adv. in Neuro CT/NMR,
Feb. 1984

Society of Nuclear Medicine Annual Meeting, Chicago, Illinois, 1977, also session chairman

Third International Conference on Data Handling and Image Processing in Scintigraphy, Cambridge, Mass., 1973,
Program Chairman

International Conference on Information Processing in Medical Imaging (previously entitled Information Processing
in Scintigraphy), Chairman, 1971, Chairman, U.S. Subcommittee 1975, Board and Program Committee and session
chairman, biyearly 1973-

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GRANT REVIEWING AT THE REVIEW PANEL LEVEL (partial list)

Various NIH special study sections

NIH Diagnostic Radiology Study Section, member, 1980-1986

NIH Ad Hoc reviewer, a few per year, 1987-

NSF Ad Hoc reviewer, intermittently, 1990-

Advisory Screening Committee in Computer Science, Council for International Exchange of Scholars, 1980 - 1982.

NSF National Needs Postdoctoral Fellowships, Mathematical Sciences Panel Reviewer of Applications, December 1978, 1979, 1989

NIH Site Visitor, November 1977, June 1980, July 1981, October 1982, March 1983, February 1985, April 1985, June 1986, July 1986, February 1987, October 1987, June 1988, December 1988

NSF Site Visitor, December 1988, June 1989.

OTHER PROFESSIONAL ACTIVITIES

Fellow of American Institute for Medical and Biological Engineering, 2007

Co-founder of Morphormics, Inc., 2001

Editorial Board, *Computer Aided Surgery*, 1995-

Editorial Board, *J. of Mathematical Imaging and Vision*, 1994-2014

International Advisory Board, *Computational Imaging Series*, Kluwer Academic Publishers, 1993-

Associate Editor, *IEEE Transactions on Medical Imaging*, 1988-2010

Editorial Board, *Journal of Digital Imaging*, 1988-2001

Committee on Computers, American College of Radiology, member, 1982-1989

Advisory Editor, *Nuclear Medicine Communications*, 1979-1981

Co-chairman, Sessions of Society of Nuclear Medicine Computer Council at IEEE 1979 Nuclear Science Symposium, San Francisco, 1979

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World Federation of Nuclear Medicine and Biology, Washington, D.C., 1978, Chairman, Poster Session

Society of Nuclear Medicine Computer Council, Task Group Coordinator, 1976-1980

Graphics Committee, N.C. Board of Science and Technology, 1990 -1992

NIH PLANNING PANELS

DHSS:OWH & NCI Workshop on 3D Image Processing and Computer Aided Diagnosis for Cancer Imaging in Women, Co-organizer, 1998

NCRR Workshop on Biomedical Computing, Session convenor, April, 1991

DIRB/NCI Workshop on Imaging-Guided Stereotactic Tumor Diagnosis and Treatment, May, 1991

NCI Workshop on 3D Display and Analysis for Cancer Treatment Planning, June, 1990

NIH Imaging Planning Panel, May, 1990

National Library of Medicine Workshop on Electronic Imaging, 1989

NCI Workshop on Directions in Research in Diagnostic Imaging, Winston-Salem, N.C., October 1988

NIMH Workshop on Problems in Functional Image Analysis, November, 1984

PROFESSIONAL SOCIETIES

American Association of University Professors

Association for Computing Machinery

IEEE, Senior Member

Society of Nuclear Medicine (including Computer Council), 1974-84

Association of University Radiologists

The Association for Research in Vision and Ophthalmology, 1994-7

HONORS

Conference room in Sitterson Hall, UNC named for me, 2015

Fellow of the MICCAI Society, 2010

IEEE Outstanding Educator Award, Central North Carolina Section, 1987

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Fogarty Senior International Fellowship (NIH), 1984

Netherlands Organization for Pure Scientific Research (ZWO), Visiting Fellowship, 1983-1984, 1992

Kenan Leave: August 1983 - August 1984, January 1992 - August 1992.

Fulbright-Hays Award, 1973-74

National Science Foundation Fellow, 1963-67

Danforth Fellow, 1963-67

Sigma Xi

Phi Beta Kappa

RESEARCH GRANTS (Principal Investigator)

NIH R01: Integration of Endoscopic and CT Data for Radiation Therapy Treatment Planning, 2013-2018, co-principal investigator; Julian Rosenman: PI

Morphormics: to Support Graduate Research in Medical Image Segmentation, 2008-2009, principal investigator

NIH Small Business Grant for Morphormics: Thorax Autosegmentation for Radiotherapy, 2011- 2012, principal investigator (PI position later transferred to Richard Holloway).

R21 NIH: Deformable mapping of MRI and MRSI data to TRUS images to guide prostate biopsy, 2008-2011, principal investigator

NIH Supplement Grant: Respiratory Motion-Reduced Cone-Beam CT Guidance of Radiotherapy in Lung and Liver, 2009-2013, principal investigator of supplement, Gikas Mageras: PI of the covering R01

R21 NIH Grant: Automation of Head and Neck Radiation Treatment Planning, 2007-2010, co-principal investigator, Julian Rosenman: PI

NIH Program Project Grant: Medical Image Presentation, July 1, 1988 -2007 , program director.

NIH Grant: 3D Cerebral Vessel Location for Surgical Planning, 1997-, co-principal investigator

National Center for Research Resources and National Cancer Institute Grant: UNC Research Platform for Radiotherapy Stimulation, August 2003 – June 2008, co-principal investigator.

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NIH Grant: Automation of Head and Neck Radiation Treatment Planning, July 2007 – June 2009, co-principal investigator.

NIH Grant: Optimization and Standardization in Medical Image Display, July 1, 1985 - June 30, 1988, principal investigator.

Philips Medical Systems, Inc., Travel Grant, Collaboration with Univ. of Utrecht, 1990 - 1993

NATO Grant: Human and Computer Discrimination From Images, April 1985 - April 1990, principal investigator.

NIH Grant: Three-Dimensional Medical Image Display, December 1984 - December 1987, principal investigator jointly with Henry Fuchs.

NIH Grant: 3-D Visualization of the Carotid Arteries, December 1980 - December 1983, principal investigator jointly with E. Ralph Heinz, Henry Fuchs.

Siemens, Inc. Grant, Display Linearization, 1983 - 1984

PATENTS

Chaney, EL, S Pizer, L Kwock, E Wallen, W Hyslop, R Broadhurst, Methods, systems and computer readable media for mapping regions in a model of an object comprising an anatomical structure from one image data set to images used in a diagnostic or therapeutic intervention. 2015

Methods, Systems, and Computer Readable Media for Mapping Regions in a Model of an Object Comprising an Anatomical Structure from One Image Data Set to Images Used in a Diagnostic or Therapeutic Intervention, U.S. Patent No. 8,666,128 dated March 4, 2014.

M-rep based hexahedral meshes for deformable modeling, U.S. Patent pending, filed July 14, 2004.

Systems and Methods for Tubular Object Processing, U.S. Patent No. 6,690,816, dated Feb 10, 2004. Stephen Aylward is main inventor.

Methods and Systems for Modeling Objects and Object Image Data using Medial Atoms, U.S. patent application No. 60/326,623 filed 9/28/01. Sarang Joshi is main inventor.

Image Object Matching Using Core Analysis and Deformable Shape Loci, Claims submitted, U.S. Patent No. 5,926,568, July 20, 1999. Main inventor among many.

A 3-D Display Based on Conventional 2-D Graphics Equipment, co-inventor with H. Fuchs, 4,607,255, August 19, 1986.

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BIBLIOGRAPHY

* = principal author or co-principal author of book, chapter, article, or review. Articles with numbers followed by "=" or "<" are essentially equivalent to (=) or subsets of (<) other articles indicated.

BOOKS

Medial Representations: Mathematics, Algorithms and Applications, with Kaleem Siddiqi, Springer Publishers, 2008.

3D Imaging in Medicine: Algorithms, Systems, Applications, Proceedings of NATO Advanced Research Workshop, co-editor with Karl Heinz Höhne, Henry Fuchs. Springer-Verlag, Berlin, 1990.

Proceedings 1986 Workshop on Interactive 3D Graphics, co-editor with Frank Crow. Association for Computing Machinery, 1987.

* *To Compute Numerically: Concepts and Strategies*, with Victor L. Wallace, Little, Brown and Company, Boston, 1983.

* *Numerical Computing and Mathematical Analysis*, S.R.A., Palo Alto, 1975

Information Processing in Scintigraphy, (Proceedings of Third International Conference on Data Handling and Image Processing in Scintigraphy, Cambridge, Mass., 1973), co-editor with C.E. Metz G.L. Brownell. Doc. CONF-730687, U.S.E.R.D.A. Technical Information Center, Oak Ridge, 1975.

CHAPTERS

(15) Chaney, E. and Pizer, S. Deformable Shape Models for Image Segmentation. In *Image Processing in Radiotherapy Applications*, Chapter 13, ed. Kristy Brock, 2010.

(12-14) K. Siddiqi and S. Pizer, Chapters 1, 8, 9 of *Medial Book*, Springer, 2007.

(11) Siddiqi, K., and Pizer, S. Medial models for vision. In Dickinson, S., Leonardis, A., Schiele, B., and Tarr, M. J., editors, *Object Categorization: Computer and Human Vision Perspectives*, Chapter 25. Cambridge University Press, 2009.

(10) PT Fletcher, SM Pizer, S Joshi (2005). Shape Variation of Medial Axis Representations via Principal Geodesic Analysis on Symmetric Spaces. To appear in *Statistics and Analysis of Shapes*, eds. H. Krim and A. Yezzi, Springer-Verlag.

(9) *SM Pizer, BM Hemminger, RE Johnston (1998). Display, Including Enhancement, of Two-Dimensional Images. *Image-Processing Techniques for Tumor Detection*, Chapter 5, pp. 101-130, RN Strickland, ed., Marcel Dekker, Inc, 2002.

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(8) Object Shape in Medical Images, Chapter 6. *Biomedical Imaging IV* 4th IEEE EMBS International Summer School on Biomedical Imaging. Berder Island, France, June 17-24, 2000 Eds. C Roux and Jean-Louis Coatrieux.

(7) *V. Interrante, W. Oliver, S. M. Pizer and Henry Fuchs. Display Methods for Grey-Scale Voxel-Based Data Sets, Chapter 6 in *3D Confocal Microscopy: Volume Investigation of Biological Specimens*, John Stevens, Linda Mills and Judy Trogadis, eds., pp. 132-160, Academic Press, 1994.

(6) LM Lifshitz, SM Pizer (1991). A Multiresolution Hierarchical Approach to Image Segmentation Based on Intensity Extrema. *IEEE Trans. PAMI*, Vol. 12, No. 6, pp. 529-540, June 1990. Reprinted in *Computer Vision: Advances and Applications*, Rangachar Kasturi, Ramesh C. Jain, pp. 606-617, IEEE Computer Society Press, Los Alamitos, CA.

(5) *S.M. Pizer, G.L. Brownell, D.A. Chesler (1974). Scintigraphic Data Processing, *Instrumentation in Nuclear Medicine*, Vol. II. G.J. Hine, J.A. Sorenson, eds, pp. 229-262. Academic Press, New York.

(4) * SM Pizer (1971). Resolution Recovery in Radioisotope Scans", *Advances in Medical Physics*, pp. 297-303. J.S. Laughlin E.W. Webster, editors. Second International Conference on Medical Physics, Inc., Boston.

(3) * SM Pizer, A.B. Ashare, A.B. Callahan, G.L. Brownell (1970). Fourier Transform Analysis of Tracer Data. *Concepts and Models of Biomathematics: Simulation Techniques and Methods*, Chapter 3, pp. 105-129. F. Heinmets L.D. Cady, editors. Marcel Dekker, Inc., New York.

(2) * SM Pizer, HG Vetter (1970). Processing Quantum Limited Images. *Picture Processing and Psychopictorics*, pp. 165-176. Academic Press, New York.

(1) * AB Callahan, SM Pizer (1966). The Applicability of Fourier Transform Analysis to Biological Compartmental Models. *Natural Automata and Useful Simulations*, pp. 149-177. H.H. Pattee, E.A. Edelsack, L. Fein, A.B. Callahan, editors. Spartan Books, Washington.

PUBLISHED ARTICLES

(339) Zhao, Q, T Price, S Pizer, M Niethammer, . Alterovitz and J Rosenman. Surface Registration in the Presence of Missing Patches and Topology Change. In Proceedings of *Medical Image Understanding and Analysis* , pp 8-13. 2015

(338) Vicory, J., Foskey, M., Fenster, A., Ward, A., & Pizer, S.M. Prostate Segmentation From 3DUS Using Regional Texture Classification and Shape Differences. Proceedings of Shape 2014 - Symposium on Statistical Shape Models & Applications, June 2014, Delémont, Switzerland.

(337) Vicory, J., Foskey, M., Fenster, A., Ward, A., & Pizer, S.M. Segmentation of the Prostate from 3D TRUS via Regional Texture Classification and Skeletal Model Deformations. Submitted for publication.

(336) Hong, J., Vicory, J., Schulz, J., Styner, M., Marron, J.S., & Pizer, S.M. Classification of Medically Imaged Objects via S-rep Statistics. Submitted for publication.

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- (335) Pizer, S.M., Hong, J., Jung, S., Marron, J.S., Schulz, J., & Vicory, J. Relative Statistical Performance of S-reps with Principal Nested Spheres vs. PDMs. Proceedings of Shape 2014 – Symposium on Statistical Shape Models & Applications, June 2014, Delémont, Switzerland.
- (334) Qingyu Zhao, Stephen Pizer, Chen-Rui Chou, and Gig Mageras, "Local Metric Learning in 2D/3D Deformable Registration With Application in the Abdomen," *IEEE Transactions on Medical Imaging*, Volume 33, Issue 8, pp 1592 – 1600. 2014
- (333) Qingyu Zhao, Stephen Pizer, Marc Niethammer, and Julian Rosenman, "Geometric-Feature-Based Spectral Graph Matching in Pharyngeal Surface Registration," Proc of MICCAI 2014 ,Vol. 8673, pp 259-266
- (332) Pizer, S.M., Jung, S., Goswami, D., Vicory, J., Zhao, X., Chaudhuri, R., Damon J.N., Huckemann, S., & Marron, J.S. (2013). Nested sphere statistics of skeletal models. In *Innovations for Shape Analysis: Models and Algorithms*, (M. Breuss, A. Bruckstein, and P. Maragos, eds.), (pp. 93-115). Springer Berlin Heidelberg.
- (331) Joern Schulz, Sungkyu Jung, Stephan Huckemann, Michael Pierrynowski, J.S.Marron, and Stephen M. Pizer, "Analysis of Rotational Deformations from Directional Data," *Journal of Computational and Graphical Statistics*, volume 24, Issue 2: 539-560.2015.
- (330) Jared Vicory, Mark Foskey, J.S. Marron, Aaron Fenster, Aaron Ward, and Stephen Pizer, "Regional Classification of Texture in 3D Ultrasound of the Prostate," MICCAI submission, 2014
- (329) Joern Schulz, Stephen M. Pizer, J.S. Marron, and Fred Godtlielsen, "Nonlinear Hypothesis Testing of Geometrical Object Properties of Shapes Applied to Hippocampi," June 2015
- (328) Chen-Rui Chou, Brandon Frederick, Gig Mageras, Sha Chang, and Stephen Pizer, "[2D/3D Image Registration Using Regression Learning](#)," *Computer Vision and Image Understanding*, (A.C. Kak, ed.), vol. 117, no. 9, pp. 1095-1106, Elsevier, Sep. 2013.
- (327) Joern Schulz, Sungkyu Jung, Stephan Huckemann, Michael Pierrynowski, J.S. Marron, and Stephen M. Pizer, "[Analysis of Rotational Deformations from Directional Data](#)," *Journal of Computational and Graphical Statistics*, June 2013.
- (326) Jared Vicory, Mark Foskey, and Stephen Pizer, "Prostate Segmentation from 3DUS Using Regional Texture Classification and Shape Differences -- Late Draft," May 2013.
- (325) Kabul, I., Pizer, S. M., Rosenman, J. and Niethammer, M. (2011), An Optimal Control Approach for Texture Metamorphosis. *Computer Graphics Forum*, 30: 2341–2353. doi: 10.1111/j.1467-8659.2011.02067.x
- (324) Chen-Rui Chou, Sha Chang, and Stephen Pizer, "WE-E-BRC-02: Real-Time Deformable Registration Using Multi-Pixel X-Ray Technology for Image-Guided Lung Radiotherapy," in *Medical Physics AAPM Conference 38:6*, 3818, 2011.
- (323) Chen-Rui Chou and Stephen Pizer, "Real-time 2D/3D Deformable Registration Using Metric Learning," published as MICCAI workshop on Medical Computer Vision, Oct. 2012.

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- (322) Chen-Rui Chou, Brandon Frederick, Xiaoxiao Liu, Gig Mageras, Sha Chang, and Stephen Pizer, "[CLARET: A Fast Deformable Registration Method Applied to Lung Radiation Therapy](#)," in *Fourth International (MICCAI) Workshop on Pulmonary Image Analysis*, Sep. 2011.
- (321) Chen-Rui Chou, Brandon Frederick, Gig Mageras, Sha Chang, and Stephen Pizer, "2D/3D Image Registration using Regression Learning," *Computer Vision and Image Understanding*, vol. 117, no. 9, pp. 1095-1106, September, 2013.
- (320) Pizer, Stephen M.; S Jung, J Vicory, D Goswami, X Zhao, R Chaudhuri, JN Damon, S Huckemann, JS Marron, "Nested Sphere Statistics of Skeletal Models," *Proc. Dagstuhl Workshop on Innovations for Shape Analysis: Models and Algorithms*. Springer Lecture Notes in Computer Science, 2012.
- (319) Sungkyu Jung, J.S. Marron, and Stephen M. Pizer, "[A Backward Generalization of PCA for Image Analysis](#)," in *Proceedings of an International Symposium on the Occasion of the 25th Anniversary of McGill University Centre for Intelligent Machines*, (Angeles, J.; Boulet, B.; Clark, J.J.; Kovacs, J.; Siddiqi, K. (Eds.): 111-124, 2010.
- (318) Chen-Rui Chou, C. Brandon Frederick, Sha Chang, and Stephen M. Pizer, "[A learning-based patient repositioning method from limited-angle projections](#)," in *Proceedings of an International Symposium on the Occasion of the 25th Anniversary of McGill University Centre for Intelligent Machines*, (Angeles, J.; Boulet, B.; Clark, J.J.; Kovacs, J.; Siddiqi, K. (Eds): 83-94, 2010.
- (317) Liu, Xiaoxiao, Bradley C. Davis, Marc Niethammer, Stephen M. Pizer, Gig S. Mageras, "Prediction-driven Respiratory Motion Atlas Formation for 4D Image-guided Radiation Therapy in Lung," *MICCAI'10 workshop on Pulmonary Image Analysis*, Beijing, China, pp. 71-82, Sep. 2010.
- (316) Ilknur Kabul, Derek Merck, Julian Rosenman, Stephen M. Pizer, Model-based Solid Texture Synthesis for Anatomic Volume Illustration, in proceedings of the Eurographics Workshop on Visual Computing for Biology and Medicine (VCBM), Leipzig, Germany, Jul. 1-2, 2010.
- (315) Liu, Xiaoxiao, Ipek Oguz, Stephen M. Pizer, and Gig S. Mageras, "[Shape-correlated Deformation Statistics for Respiratory Motion Prediction in 4D Lung](#)," *Proceedings of SPIE*, vol. 7625, pp. 76252D-76252D-10 (2010).
- (314) Gorczowski, K, M. Styner, J-Y Jeong, JS Marron, J Piven, H Cody Hazlett, SM Pizer, G Gerig (2010). "Multi-object analysis of volume, pose, and shape using statistical discrimination," *IEEE Trans. PAMI* 32(4): 652-661.
- (313) Sungkyu Jung, Xiaoxiao Liu, J. S. Marron, and Stephen M. Pizer, "Generalized PCA via the backward stepwise approach in image analysis," in *Proceedings of an International Symposium on the Occasion of the 25th Anniversary of McGill University Centre for Intelligent Machines*, (J.; Boulet Angeles, ed.), 2010.
- (312) Saboo, Rohit, Joshua Levy, Edward Chaney, and Stephen Pizer, "[Medial Models of Populations of Nearly Tubular Objects](#)," *Proceedings of Probabilistic Models for Medical Image Analysis*, 2009.
- (311) Xiaoxiao Liu, Rohit Saboo, Stephen M. Pizer, and Gig S. Mageras, "A Shape-Navigated Image Deformation Model for 4D Lung Respiratory Motion Estimation," in *Proceedings of the Sixth IEEE International*

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Conference on Symposium on Biomedical Imaging: From Nano to Macro, (Boston, Massachusetts, USA), pp. 875-878, 2009.

(310) Merck, D., Tracton, G., Saboo, R., Levy, J., Chaney, E., Pizer, S.M., and Joshi, S. (2008). "Training Models of Anatomic Shape Variability," *Medical Physics* 35(8):3584-96, August 2008.

(309) Jeong, J.-Y., Stough, J.V., Marron, J.S., Pizer, S.M. (2008). "Conditional-Mean Initialization Using Neighboring Objects in Deformable Model Segmentation," *SPIE Medical Imaging*, February 2008.

(308) Dam, E.B., Fletcher, P.T., Pizer, S. M. (2008). "Automatic Shape Model Building Based on Principal Geodesic Analysis Bootstrapping," *ScienceDirect*, pp. 136-151.

(307) Liu, X., Jeong, J.-Y., Levy, J., Saboo, R., Chaney, E.L., and Pizer, S.M. (2008). "A Large-to-Fine Scale Shape Prior for Probabilistic Segmentations Using a Deformable M-rep," *Proceedings of CVPR*, pp.1-8, 2008.

(306) Levy, J., Pizer, S. M., and Foskey, M. (2008). "Rotational Flows for Interpolation Between Sampled Surfaces," *Proceedings of MMBIA Workshop*.

(305) Xiaoxiao Liu, Ja-Yeon Jeong, Joshua H. Levy, Rohit R. Saboo, Edward L. Chaney, and Stephen M. Pizer, "A Coarse-to-fine Shape Prior for Probabilistic Segmentations Using A Deformable M-rep," published as *Proceedings MMBIA Workshop*, 2008.

(304) Ja-Yeon Jeong, Surajit Ray, Qiong Han, Xiaoxiao Liu, Keith E. Muller, and Stephen M. Pizer, "Goodness of Prediction for Principal Components of Shape: A Correlation Measure," *International Journal of Computer Vision*, 2008.

(303) Stephen M. Pizer, Robert E. Broadhurst, Joshua Levy, Xioaxiao Liu, Ja-Yeon Jeong, Joshua Stough, Gregg Tracton, and Edward L. Chaney, "Segmentation by Posterior Optimization of M-reps: Strategy and Results," techreport , 2008.

(302) Lu, C., Pizer, S. M., Joshi, S., and Jeong, J-Y (2007). "[Statistical Multi-object Shape Models](#)," *International Journal of Computer Vision*, vol. 75, no. 3, pp. 387-404.

(301) Gorczowski, K., Styner, M., Jeong, J-Y, Marron, J. S., Piven, J., Hazlett, H. C., Pizer, S. M., and Gerig G. (2007). "[Discrimination Analysis using Multi-object Statistics of Shape and Pose](#)," *Processing SPIE*, vol. 6512, pp. 1-8.

(300) Han, Q. , Merck, D., Levy, J., Villarruel, C., Chaney, E., and Pizer, S. M. (2007). "[Geometrically Proper Models in Statistical Training](#)," *Processing of Information Processing in Medical Imaging*, (Nico Karssemeijer and Boudewijn Lelieveldt, eds.), vol. 4584, pp. 751-762.

(299) Crouch J., Pizer, S. M., Chaney, E. L., Hu, Y., Mageras, G. S., and Zaider, M. (2007). "[Automated Finite Element Analysis for Deformable Registration of Prostate Images](#)," *IEEE Transactions on Medical Imaging*, vol. 26, no. 10, pp. 1379-1390.

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- (298) Joshua Stough, Robert E. Broadhurst, Stephen M. Pizer, and Edward L. Chaney (2007). "[Clustering on Local Appearance for Deformable Model Segmentation](#)," in *Biomedical Imaging: From Nano to Macro 2007*, ISBI 2007.
- (297) Levy, J. H., Broadhurst, R. E., Ray, S., Chaney, E. L., and Pizer, S. M. (2007). "[Signaling Local Non-credibility in an Automatic Segmentation Pipeline](#)," in *Medical Imaging 2007: Image Processing*, (Josien P. W. Pluim and Joseph M. Reinhardt, eds.), published as *Procedures of SPIE*, vol. 6512, 2007.
- (296) Levy J. H., Gorczowski K., Liu X., Pizer S.M., and Styner M (2007). "[Caudate Segmentation using Deformable M-reps](#)," in *MICCAI Workshop: 3D Segmentation in the Clinic: A grand challenge*, Oct. 2007.
- (295) J. H. Levy, R. E. Broadhurst, J. Jeong, X. Liu, J. Stough, G. S. Tracton, S. M. Pizer, and E. L. Chaney, "Prostate and Bladder Segmentation Using a Statistically Trainable Model," published as Abstract and poster at conference of the American Society for Therapeutic Radiology and Oncology, Oct. 2007.
- (294) DiMaio, S., Kapur, T., Cleary, K., Aylward, S., Kazanzides, P., Vosburgh, K., Ellis, R., Duncan, J., Farahani, K., Lemke, H., Peters, T., Lorensen, B., Gobbi, D., Haller, J., Clarke, L., Pizer, S., Taylor, R., Galloway, B., Fichtinger, G., Hata, N., Lawson, K., Tempny, C., Kikinis, R., and Jolesz, F (2007). "Challenges in Image-Guided Therapy System Design," *NeuroImage* 37 Suppl 1:S144-51, 2007.
- (293) Gorczowski, K., Styner M., Jeong, J-Y., Marron, J.S, Piven J., Hazlett, H. C., Pizer, S. M., and Gerig, G., "[Statistical Shape Analysis of Multi-Object Complexes](#)," *CVPR*, pp. 1-8, Jun. 2007.
- (292) Stough, J., R. E. Broadhurst, S. M. Pizer, and E. L. Chaney (2007). "Regional Appearance in Deformable Model Segmentation," *Information Processing in Medical Imaging*, N. Karssemeijer, B. Lelieveldt, editors, Springer.
- (291) Han, Q, D. Merck, J. Levy, C. Villarruel, E. Chaney, and S. M. Pizer (2007). Proper Training. *To appear in Information Processing in Medical Imaging*, N. Karssemeijer, B. Lelieveldt, editors, Springer.
- (290) Derek Merck, Stephen Pizer, and Julian Rosenman, "Visualizing Anatomic Changes over Multi-Day Radiotherapy," *techreport*, 2007.
- (289) Stephen M. Pizer, Robert E. Broadhurst, Joshua Levy, Xiaoxiao Liu, Ja-Yeon Jeong, Joshua Stough, Gregg Tracton, and Edward L. Chaney, "Segmentation by Posterior Optimization of M-reps: Strategy and Results," 2007.
- (288) M. Foskey, A. G. Gash, Q. Han, G. Tracton, S. Joshi, S. Pizer, and E. Chaney, "A Software Toolkit for Multi-Image Registration and Segmentation in IGRT and ART," *techreport*, 2007.
- (287) Rohit R Saboo, Christina Villarruel, Edward M Chaney, Julian G Rosenman, and Stephen M Pizer, "Segmentation of Tubular Objects by Posterior Optimization of M-reps," 2007.
- (286) K. Muller, S. Ray, J-Y Jeong, and S. M. Pizer, "Goodness of prediction for principal components, including high dimension, low sample size," 2007.

Stephen M. Pizer Curriculum Vitae

- (285) Rohit R. Saboo, Julian G. Rosenman, and Stephen M. Pizer, "GeoInterp: Contour Interpolation with Geodesic Snakes," *techreport* , July 2006.
- (284) G Gerig, S Joshi, PT Fletcher, K Gorczowski, S Xu, SM Pizer, and M Styner, "Statistics of Populations of Images and its Embedded Objects: Driving Applications in Neuroimaging," *IEEE International Symposium on Biomedical Imaging (ISBI)*, pp. 1120-1123, Apr. 2006.
- (283) D Merck, G Tracton, S Pizer, and S Joshi, "A Methodology for Constructing Geometric Priors and Likelihoods for Deformable Shape Models," *techreport* , 2006.
- (282) Qiong Han, Stephen M. Pizer, and James N. Damon, "Interpolation in Discrete Single Figure Medial Objects," *IEEE Computer Society Workshop on Mathematical Methods in Biomedical Image Analysis (MMBIA 2006)*, 2006.
- (281) Joshua H. Levy, Robert E. Broadhurst, Surajit Ray, Edward L. Chaney, and Stephen M. Pizer, "Assessing the Local Credibility of a Medical Image Segmentation," *techreport* , 2006.
- (280) Stephen M. Pizer, Edward L. Chaney, Robert E. Broadhurst, Xifeng Fang, Ja-Yeon Jeong, Joshua Stough, and Gregg Tracton, "Segmentation of Kidneys and Pelvic Organs from CT by Posterior Optimization of M-reps," *techreport* , 2006.
- (279) R Saboo, S Joshi, J Levy, and S Pizer, "Warping Nodal Levels Via M-Rep Based Diffeomorphism," in Conference submission, 2006.
- (278) Derek Merck, Gregg Tracton, Rohit Saboo, Edward Chaney, Stephen Pizer, and Sarang Joshi, "A Methodology and Implementation for Constructing Geometric Priors for Deformable Shape Models," Conference submission, 2006.
- (277) Broadhurst, RE, J Stough, S Pizer, and E Chaney (2006). "A Statistical Appearance Model Based on Intensity Quantiles." *Proceedings of ISBI*, pp. 422-425, 2006.
- (276) Styner, M., Gorczowski, K., Fletcher, T., Jeong, J-Y, Pizer, S. M. and Gerig, G. (2006). "[Statistics of Pose and Shape in Multi-Object Complexes using Principal Geodesic Analysis](#)," in *Proceedings MIAR conference*, Aug. 2006.
- (275) Pizer, S. M., Broadhurst, R. E., Jeong, J-Y, Han, Q., Saboo, R., Stough, J., Tracton, G., and Chaney, E. L. (2006). "[Intra-Patient Anatomic Statistical Models for Adaptive Radiotherapy](#)," *MICCAI Workshop From Statistical Atlases to Personalized Models: Understanding Complex Diseases in Populations and Individuals*, pp. 43-46, 2006.
- (274) M Rao, J Stough, Y-Y Chi, K Muller, GS Tracton, Pizer, SM, and EL Chaney, "Comparison of Human and Automatic Segmentations of Kidneys from CT Images," *International Journal of Radiation Oncology, Biology, Physics* , vol. 61, no. 3, pp. 954-960, 2005.
- (273) Han, Q, SM Pizer, D Merck, S Joshi, and JY Jeong (2005). "[Multi-figure Anatomical Objects for Shape Statistics](#)," *Information Processing in Medical Imaging (IPMI)*, Lecture Notes in Computer Science, Springer **3565**: 701-712, 2005.

Stephen M. Pizer
Curriculum Vitae

- (272) Pizer, SM, JY Jeong, RE Broadhurst, S Ho, and J Stough (2005). “[Deep Structure of Images in Populations via Geometric Models in Populations](#),” *International Workshop on Deep Structure, Singularities and Computer Vision (DSSCV)*. Proceedings in print: pp. 48-58, 2005.
- (271) Pizer, SM, JY Jeong, C Lu, K Muller, and S Joshi (2005). “[Estimating the Statistics of Multi-Object Anatomic Geometry Using Inter-Object Relationships](#),” *International Workshop on Deep Structure, Singularities and Computer Vision (DSSCV)*. Proceedings in print: pp. 59-70, 2005.
- (270) Broadhurst, RE, J Stough, SM Pizer, and EL Chaney (2005). “[Histogram Statistics of Local Model-Relative Image Regions](#),” *International Workshop on Deep Structure, Singularities and Computer Vision (DSSCV)*. Proceedings in print: pp. 71-82.
- (269) Pizer, SM, PT Fletcher, S Joshi, AG Gash, J Stough, A Thall, G Tracton, EL Chaney (2004). “A Method & Software for Segmentation of Anatomic Object Ensembles by Deformable M-Reps,” *MedicalPhysics*. **32**(5): 1335-1345, 2004.
- (268) E Chaney, S Pizer, S Joshi, R Broadhurst, T Fletcher, G Gash, Q Han, JY Jeong, C Lu, D Merck, J Stough, G Tracton, MD J Bechtel, J Rosenman, YY Chi, and K Muller, "Automatic Male Pelvis Segmentation from CT Images via Statistically Trained Multi-Object Deformable M-rep Models," Presented at *American Society for Therapeutic Radiology and Oncology (ASTRO)*, 2004.
- (267) Y Fridman and SM Pizer, "Extracting the Geometry of Branching Slabs via Cores," *techreport TechnicalReportTR04016*, Chapel Hill, NC, 2004.
- (266) Crouch, J, SM Pizer, EL Chaney, M Zaider (2004). “Medial Techniques to Automate Finite Element Analysis of Prostate Deformation,” *IEEE Transactions on Medical Imaging*, 2004.
- (265) Fridman, Y, SM Pizer, S Aylward, and E Bullitt (2004). “Extracting Branching Tubular Object Geometry via Cores,” *Medical Image Analysis Journal, Special MICCAI issue*. **8**(3): 169-176.
- (264) Dam, E, PT Fletcher, SM Pizer, G Tracton, J Rosenman (2004). “Prostate Shape Modeling based on Principal Geodesic Analysis Bootstrapping,” *Medical Image Computing and Computer-Assisted Intervention (MICCAI 2004)*, C Barillot, DR Haynor, and P Hellier, eds. Lecture Notes in Computer Science, **3217**(Part II): 1008-1016.
- (263) Han, Q, C Lu, S Liu, SM Pizer, S Joshi, A Thall (2004). “Representing Multi-Figure Anatomical Objects,” *IEEE International Symposium on Biomedical Imaging (ISBI 2004)*, CD Proceedings: pp. 1251-1254, 2004.
- (262) Stough, J, SM Pizer, EL Chaney, M Rao (2004). “Clustering on Image Boundary Regions for Deformable Model Segmentation,” *IEEE International Symposium on Biomedical Imaging (ISBI 2004)*, CD Proceedings: pp. 436-439, 2004.
- (261) Fletcher, PT, C Lu, SM Pizer, S. Joshi (2004). ”Principal Geodesic Analysis for the Study of Nonlinear Statistics of Shape,” *IEEE Transactions on Medical Imaging, IPMI 2003 special issue*, **23**(8): pp. 995-1005.

Stephen M. Pizer Curriculum Vitae

- (260) SM Pizer, G Gerig, S Joshi, and S Aylward, "Multiscale Medial Shape-Based Analysis of Image Objects," *Proceedings of the IEEE*, (C Roux and JK Udupa, eds.), vol. 91, no. 10, pp. 1670-1679, IEEE, Oct. 2003.
- (259) E Bullitt, G Gerig, S Pizer, and S Aylward, "Measuring Tortuosity of the Intracerebral Vasculature from MRA Images," *IEEE Transactions on Medical Imaging*, vol. 22, no. 9, pp. 1163-1171, IEEE, Sep. 2003.
- (258) Vetsa, YSK, M Styner, SM Pizer, JA Lieberman, and G Gerig (2003). "Caudate Shape discrimination in Schizophrenia using Template-free non-parametric tests," *Medical Image Computing and Computer-Assisted Intervention (MICCAI 2003)*, RE Ellis and TM Peters, eds. *Lecture Notes in Computer Science*, **2879**: 661-669, 2003.
- (257) Crouch, J, SM Pizer, EL Chaney, M Zaider (2003). "Medially Based Meshing with Finite Element Analysis of Prostate Deformation," *Medical Image Computing and Computer-Assisted Intervention (MICCAI 2003)*, RE Ellis and TM Peters, eds. *Lecture Notes in Computer Science*, **2878**: 108-115, 2003.
- (256) Fridman, Y, SM Pizer, S Aylward, and E Bullitt (2003). "Segmenting 3D Branching Tubular Structures using Cores," *Medical Image Computing and Computer-Assisted Intervention (MICCAI 2003)*, RE Ellis and TM Peters, eds. *Lecture Notes in Computer Science*, **2879**: 570-577, 2003.
- (255) Pizer, S (2003). "Guest Editorial – Medial & Medical: A Good Match for Image Analysis," *IJCV Special UNC-MIDAG issue*, **55**(2/3): 79-84, 2003.
- (254) Pizer, S, PT Fletcher, S Joshi, A Thall, Z Chen, Y Fridman, D Fritsch, G Gash, J Glotzer, M Jiroutek, K Muller, G Tracton, P Yushkevich, E Chaney (2003). "Deformable M-reps for 3D Medical Image Segmentation," *IJCV Special UNC-MIDAG issue*, **55**(2/3): 85-106, 2003.
- (253) Styner, M, G Gerig, S Pizer, S Joshi (2002). "Automatic and Robust Computation of 3D Medial Models Incorporating Object Variability," *IJCV Special UNC-MIDAG issue*, **55**(2/3): 107-122, 2002.
- (252) Pizer S, K Siddiqi, G Székely, J Damon, S Zucker (2002). "Multiscale Medial Loci and their Properties," *IJCV Special UNC-MIDAG issue*, **55**(2/3): 155-179, 2002.
- (251) Yushkevich, P, S Joshi, SM Pizer, JG Csernansky, and LE Wang (2003). "Feature Selection for Shape-Based Classification of Biological Objects," *Information Processing in Medical Imaging (IPMI 2003)*, C Taylor and JA Noble, eds., *Lecture Notes in Computer Science*, Springer **2732**: 114-125, 2003.
- (250) Fletcher, PT, S Joshi, C Lu, and S Pizer (2003). "Gaussian Distributions on Lie Groups and Their Application to Statistical Shape Analysis," *Information Processing in Medical Imaging (IPMI 2003)*, C Taylor and JA Noble, eds., *Lecture Notes in Computer Science*, Springer **2732**: 450-462, 2003.
- (249) Lu, C, S Pizer, S Joshi (2003). "A Markov Random Field Approach to Multi-scale Shape Analysis," *Scale Space Methods in Computer Vision (Scale Space 2003)*. LD Griffin and M Lillholm, eds. *Lecture Notes in Computer Science* **2695**: 416-431, 2003.

Stephen M. Pizer
Curriculum Vitae

- (248) Pizer, SM, PT Fletcher, A Thall, M Styner, G Gerig, S Joshi (2003). "Object models in multiscale intrinsic coordinates via m-reps," *Image and Vision Computing*, Special Issue on Generative Model-based Vision, **21**(1): 5-15, 2003.
- (247) Yushkevich, P, PT Fletcher, S Joshi, A Thall, S Pizer (2003). "Continuous Medial Representations for Geometric Object Modeling in 2D and 3D," *Image and Vision Computing*, Special Issue on Generative Model-based Vision, **21**(1): 17-27, 2003.
- (246) Pizer, SM (2003). The Medical Image Display and Analysis Group at the University of North Carolina: Reminiscences and Philosophy. *IEEE Transactions on Medical Imaging*, **22**(1): 2-10.
- (245) S Joshi, S Pizer, PT Fletcher, P Yushkevich, A Thall, and JS Marron, "Multi-scale Deformable Model Segmentation and Statistical Shape Analysis Using Medial Descriptions," *IEEE Transactions on Medical Imaging*, vol. 21, no. 5, pp. 538-550, IEEE, May 2002.
- (244) J Furst and S Pizer, "Optimal Parameter Ridges," *Journal of Visual Communication and Image Representation*, vol. 13, pp. 119-134, 2002.
- (243) P. T. Fletcher, S. Joshi, A. G. Gash, G. S. Tracton, S. M. Pizer, and E. L. Chaney, "Pablo: clinical prototype software for automatic image segmentation of normal anatomical structures using medially based deformable models," *International Journal of Radiology Oncology Biology Physics*, vol. 52, no. 2, 2002.
- (242) Pizer, S, G Gerig, S Joshi, S Aylward (2002). "Multiscale Medial Shape-Based Analysis of Image Objects," Invited paper for *Proceedings of the IEEE*, **91**(10): 1670-1679, 2002.
- (241) Katz, R, S Pizer (2002). "Untangling the Blum Medial Axis Transform," *IJCV Special UNC-MIDAG issue*, **55**(2/3): 139-153, 2002.
- (240) Bullitt, E, G Gerig, S Pizer, S Aylward (2002). "Measuring Tortuosity of the Intracerebral Vasculature from MRA Images," *IEEE Transactions on Medical Imaging*, **22**(9): 1163-1171, 2002.
- (239) Yushkevich, P, PT Fletcher, S Joshi, A Thall, S Pizer (2002). "Continuous Medial Representations for Geometric Object Modeling in 2D and 3D," *First International Workshop on Generative-Model-Based Vision (GMBV 2002)*, AEC Pece, ed. Technical Report DIKU-TR-2002/01: 11-19.
- (238) Chen Z, S Pizer, E Chaney, S Joshi (2002). "Medical Image Synthesis via Monte Carlo Simulation," *Medical Image Computing and Computer-Assisted Intervention (MICCAI 2002)*, T Dohi and R Kikinis, eds. Lecture Notes in Computer Science, **2488**: 347-354, 2002.
- (237) Pizer SM, T Fletcher, A Thall, M Styner, G Gerig, S Joshi (2002). "Object Models in Multiscale Intrinsic Coordinates via M-reps," *First International Workshop on Generative-Model-Based Vision (GMBV 2002)*, AEC Pece, ed. Technical Report DIKU-TR-2002/01: 1-9.
- (236) Fletcher, PT, SM Pizer, G Gash, S Joshi (2002). "Deformable M-rep segmentation of object complexes," *IEEE International Symposium on Biomedical Imaging (ISBI)*, CD proceedings, 26-29.

Stephen M. Pizer Curriculum Vitae

- (235) Pizer S, S Joshi, PT Fletcher, M Styner, G Tracton, Z Chen (2001). "Segmentation of Single-Figure Objects by Deformable M-reps," *Medical Image Computing and Computer-Assisted Intervention (MICCAI 2001)*, WJ Niessen, MA Viergever, eds. Lecture Notes in Computer Science, **2208**: 862-871, 2001.
- (234) Furst J and S Pizer. "Marching Ridges," *IASTED International Conference on Signal and Image Processing*, Hawaii, pp.22-26, Aug. 2001.
- (233) Furst J and S Pizer (2001). "Shape Analysis of Objects in 3D Images," *5th World Multiconference on Systemics, Cybernetics and Informatics*, SCI 2001, 6:289-292.
- (232) Furst J and S Pizer, "Optimal Parameter Ridges," *Journal of Visual Communication and Image Representation* **13**: 119-134, 2002.
- (231) Joshi S, SM Pizer, PT Fletcher, A Thall, G Tracton (2001). "Multi-scale 3-D Deformable Model Segmentation Based on Medial Description," *Information Processing in Medical Imaging (IPMI 2001)*, MF Insana, RM Leahy, eds., Lecture Notes in Computer Science, Springer **2082**:64-77, 2001. "Multi-scale Deformable Model Segmentation and Statistical Shape Analysis Using Medial Descriptions," In expanded form in *IPMI '01* special issue of *IEEE Transactions on Medical Imaging*, **21**(5): 538-550, 2001.
- (230) Yushkevich P, SM Pizer, S Joshi, JS Marron (2001). "Intuitive, Localized Analysis of Shape Variability," *Information Processing in Medical Imaging (IPMI 2001)*, MF Insana, RM Leahy, eds., Lecture Notes in Computer Science, Springer **2082**:402-408, 2001.
- (229) Levine L, Tracton GS, Potter L, Chaney EC, Mageras GS, and Pizer SM, "Toward Measuring Lung Shape in EPIs for Gated Treatment," in *ASTRO*, Oct. 2000.
- (228) Levine L, Tracton GS, Potter L, Chaney EL, and Pizer SM, "Verification of MLC Leaf Positions in Beamview Images," published as *ASTRO*, Oct. 2000.
- (227) A. Thall, S. M. Pizer, and P. M. Fletcher, "Deformable solid modeling using sampled medial surfaces: a multiscale approach," *techreport* TR00005, 2000.
- (226) P. Yushkevich and S. Pizer, "Coarse to fine shape analysis via medial models," *techreport*, 2000.
- (225) Stetten G, SM Pizer (2000). "Medial-Guided Fuzzy Segmentation," SL Delp, AM DiGioia, B Jaramaz (eds.). *Medical Image Computing and Computer-Assisted Intervention (MICCAI 2000)*, Lecture Notes in Computer Science, **1935**: 226-235, 2000.
- (224) Pisano ED, Cole EB, Hemminger BM, Yaffe MJ, Aylward SR, Maidment ADA, Johnston RE, Williams MB, Niklason LT, Conant EF, Fajardo LL, Kopans DB, Brown ME, Pizer SM. "Image Processing Algorithms for Digital Mammography: A Pictorial Essay," *RadioGraphics* 2000; **20**: 1479-1491, 2000.
- (223) Pisano ED, Cole EB, Major S, Zong S, Hemminger BM, Muller KE, Johnston RE, Walsh R, Conant E, Fajardo LL, Feig SA, Nishikawa RM, Yaffe MJ, Williams MB, Aylward SR, Braeuning M.P, McLelland R, Pizer SM, Brown ME, Rosen E, Soo MS, Williford M, Niklason LT, Maidment ADA, Vermont A, Kornguth PJ, Kopans

Stephen M. Pizer
Curriculum Vitae

DB, Moore RH, Chakraborty D, Jong R, Shumak R, Staiger M, Plewes DB. "Radiologists' Preferences for Digital Mammographic Display," *Radiology*. 2000: **216** (3): 820-830.

(222) P. Yushkevich, S. Pizer, and T Culver, "Statistical Object Shape via a Medial Representation," *techreport* TR00002, 1999.

(221) Bullitt E, Liu A, Aylward S, Coffey C, Stone J, Mukherji S, Muller K, Pizer S (1999). "Registration of 3D cerebral vessels with 2D digital angiograms: Clinical evaluation," *Academic Radiology* **6**:539-546, 1999.

(220) Shtern F, Vannier M, Pizer SM, Winfield D (1998). "Report of the Working Group on Digital Mammography: Computer-Aided Diagnosis and 3D Image Analysis and Display," *Academic Radiology*, (6):325-384, 1998.

(219) Stetten G, Pizer SM (1999). "Medial Node Models to Identify and Measure Objects in Real-Time 3D Echocardiography," *IEEE Transactions on Medical Imaging*, **18**(10):1025-1034, 1999.

(218) Bullitt E, S Aylward, A Liu, J Stone, SK Mukherji C Coffey, G Gerig, SM Pizer (1999). "3D Graph Description of Intracerebral Vasculature from Segmented MRA and Tests of accuracy by Comparison with X-ray Angiograms," *Information Processing in Medical Imaging (IPMI '99)*, Lecture Notes in Computer Science, Springer **1613**:308-321, 1999.

(217) Stetten GD, SM Pizer (1999). "Automated Identification and Measurement of Objects via Populations of Medial Primitives, with Application to Real Time 3D Echocardiography," *Information Processing in Medical Imaging (IPMI '99)*, Lecture Notes in Computer Science, Springer **1613**:84-97, 1999.

(216) Clary GJ, SM Pizer, DS Fritsch, JR Perry (1997). "Left ventricular wall motion tracking via deformable shape loci," in *CAR '97*, the 11th International Symposium and Exhibition, Eds. HU Lemke, MW Vannier, and K. Inamura, Amsterdam: Elsevier Science BV, 1997, 271-276, 1997.

(215) S Aylward, E Bullitt, and S Pizer, "Vtree3D: Fast and Effective Visualization of Vessels, Aneurysms, Bronchial Tubes, and Bones from 3D Medical Data," *RSNA*, Nov. 1998.

(214) E Bullitt, SR Aylward, A Liu, and SM Pizer, "Advances in Vascular Imaging," in Duke Winter Conference, Mar. 1998.

(213) Furst JD, SM Pizer (1998). "Marching optimal-parameter ridges: an algorithm to extract shape loci in 3D images," In WM Wells, A Colchester, S Delp, eds., *Medical Image Computing and Computer-Assisted Intervention- MICCAI '98*. Lecture Notes in Computer Science **1496**: 780-787, Springer, New York, 1998.

(212) Liu A, E Bullitt, SM Pizer (1998). "3D/2D registration via skeletal near projective invariance in tubular objects," In WM Wells, A Colchester, S Delp, eds., *Medical Image Computing and Computer-Assisted Intervention- MICCAI '98*. Lecture Notes in Computer Science **1496**: 952-963, Springer, New York, 1998.

(211) *Pizer SM, Fritsch, DS, Low, KC, Furst, JD (1998). "2D & 3D figural models of anatomic objects from medical images," *Mathematical Morphology and Its Applications to Image Processing*, HJAM Heijmans, JBTM

Stephen M. Pizer
Curriculum Vitae

Roerdink, eds. (invited paper, Proc. ISMM '98), Kluwer Computational Imaging and Vision Series: 139-150. TR#98-005.

(210) Pisano ED, Zong S, Hemminger BM, DeLuca M, Johnston RE, Muller K, Braeuning MP, Pizer SM (1998). "Contrast Limited Adaptive Equalization Image Processing To Improve the Detection of Simulated Spiculations in Dense Mammograms," *Journal of Digital Imaging*, **11**(4):193-200, 1998.

(209) E Bullitt, A Liu, S Aylward, and S Pizer, "3D Reconstruction of Aneurysms from Projection Angiograms," in Presented at Joint Meeting of the Society of British Neurosurgeons and the Neurosurgical Society of America, Apr. 1997.

(208) D. Fritsch, S. Pizer, L. Yu, V. Johnson, and E. Chaney, "Localization and Segmentation of Medical Image Objects using Deformable Shape Loci," in International Conference on Information Processing in Medical Imaging (IPMI), pp. 127-140, 1997.

(207) D. Fritsch, S. Pizer, L. Yu, V. Johnson, and E. Chaney, "Segmentation of Medical Image Objects using Deformable Shape Loci," in Information Processing in Medical Imaging (IPMI), International Conference, pp. 127-140, 1997.

(206) DS Fritsch, SM Pizer, L Yu, V Johnson, and EL Chaney, "Segmentation of medical objects using deformable shape loci," in Information Processing Medical Imaging (IPMI) , (J Duncan and G Gindi, eds.), (New York), pp. 127-140, 1997.

(205) Liu A, E Bullitt, SM Pizer. Surgical instrument guidance using synthesized anatomical structures. *CVRMed/MRCAS*, 217-226, 1997.

(204) Pisano ED, Chandramouli J, Hemminger BM, DeLuca M, Glueck D, Johnston RE, Muller K, Braeuning MP, Pizer S (1997). "Does Intensity Windowing Improve the Detection of Simulated Calcifications in Dense Mammograms?" *Journal of Digital Imaging* **10**(2): 79-84, 1997.

(203) Pisano, E, J Chandramouli, B Hemminger, D Glueck, R Johnston, K Muller, M Braeuning, D Puff, W Garrett, S Pizer (1997). "The effect of intensity windowing on the detection of simulated masses embedded in dense portions of digitized mammograms in a laboratory setting," *Journal of Digital Imaging*, **10**(4):174-182, 1997.

(202) Aylward S, SM Pizer (1997). "Continuous Gaussian Mixture Modeling," J Duncan, G Gindi (Eds.), *Information Processing in Medical Imaging*, Lecture Notes in Computer Science, Springer **1230**:176-189, 1997. TR#96-044

(201) Bullitt, E., A Liu, SM Pizer, (1997). "Three-dimensional reconstruction of curves from pairs of projection views in the presence of error. I. Algorithms," *Medical Physics* **24**(11):1671-1678, 1997.

(200) Bullitt E., Liu A., Pizer, SM (1997). "Three-dimensional reconstruction of curves from pairs of projection views in the presence of error. II. Analysis of error." *Medical Physics*, **24**(11):1679-1687, 1997.

Stephen M. Pizer Curriculum Vitae

- (199) Bullitt E, A Liu, S Aylward SM Pizer (1997). "Reconstruction of the intracerebral vasculature from MRA and a pair of projection views," *IPMI '97, Lecture Notes in Computer Science* **1230**:537-542, Duncan J, Gindi G (eds). Springer, New York.
- (198) Bullitt E, A Liu, S Aylward, M Soltys, A Boxwala, J Rosenman, SM Pizer (1997). "Methods for displaying intracerebral vascular anatomy," *American Journal of Neuroradiology* **18**:417-420, 1997.
- (197) Victoria Interrante, Henry Fuchs, and Stephen Pizer. "Conveying the 3D Shape of Smoothly Curving Transparent Surfaces via Texture", *IEEE Transactions on Visualization and Computer Graphics*, **3**(2):98-117, Apr.-Jun. 1997.
- (196) Fritsch D, Yu Liyun, V Johnson, M McAuliffe, SM Pizer, E Chaney (1996). "A Probabilistic Approach Using Deformable Organ Models for Automatic Definition of Normal Anatomical Structures For 3d Treatment Planning," *Proceedings ASTRO*.
- (195) Furst J, RS Keller, JE Miller, SM Pizer (1997). "Image loci are ridges in geometric spaces," University of North Carolina at Chapel Hill Department of Computer Science technical report number 96-046. *Scale-Space Theory in Computer Vision*, Lecture Notes in Computer Science. Springer **1252**:176-187, 1997.
- (194) Stetten GD, RN Landesman, Pizer SM (1997). "Core-Atoms and the spectra of scale," SPIE Medical Imaging Conference, Feb., 1997, **3034**(2):642-652., also Technical Report TR97-006, University of North Carolina, Department of Computer Science.
- (193) Fritsch DS, SM Pizer, L Yu, V Johnson, EL Chaney (1997). "Segmentation of medical objects using deformable shape loci," University of North Carolina at Chapel Hill Department of Computer Science technical report number 96-033. Appeared in condensed form in J Duncan, G Gindi, eds., *Information Processing Medical Imaging (IPMI '97)*, Lecture Notes in Computer Science, Springer. **1230**:127-140, 1997.
- (192) Stephen Aylward, Elizabeth Bullitt, Stephen Pizer, and David Eberly, "Intensity Ridge and for Tubular Object Segmentation and Description," in *Proceedings of the Workshop on Mathematical Methods in Biomedical Image Analysis (MMBIA)*, pp. 131--138, Jun. 1996.
- (191) *Pizer SM, D Fritsch, V Johnson, E Chaney (1996). "Segmentation, registration, and measurement of shape variation via image object shape," *IEEE Transactions on Medical Imaging*, Oct. 1999. **18**(10): 851-865. Also University of North Carolina Computer Science Department technical report TR96-020. Tutorial notes, *Visualization in Biomedical Computing '96*, 1996.
- (190) Aylward, S, S Pizer, E Bullitt, D Eberly (1996). "Intensity Ridge for Tubular Object Segmentation and Description," University of North Carolina Computer Science Department technical report TR96-018. *Proceedings Workshop on Mathematical Methods in Biomedical Image Analysis*, IEEE Catalog #96TB100056: 131-138.
- (189) Liu A, SM Pizer, D Eberly, B Morse, J Rosenman, E Chaney, E Bullitt, V Carrasco (1994). "Volume registration using the 3D core," *Visualization in Biomedical Computing '94 SPIE* **2659**:217-226, 1994.
- (188) Bullitt, E, M Soltys, J Chen, JR Rosenman, SM Pizer (1996). "3D reconstruction of intracranial vessels from biplane projection views," *Journal of Neuroscientific Methods*, **66**:13-22, 1996 .

Stephen M. Pizer Curriculum Vitae

- (187) Fuchs H, A State, ED Pisanos, WF Garrett, G Hirota, M Livingston, MC Whitton, and SM Pizer (1996). "Towards performing ultrasound-guided needle biopsies from within a head-mounted display," *Proceedings of Visualization in Biomedical Computing 1996, Hamburg, Germany, October 1996*, 591-600
- (186) Wilson, AG, VE Johnson, L Yu, S Pizer (1995). Scale-space image models for shape deformation. *Computing Science and Statistics: Proceedings of the 27th Symposium on the Interface*, MM Meyer, JL Rosenberger, eds., Computing Science and Statistics, Interface Foundation of North America, **27**:192-201, 1995.
- (185) Mukherji SK, JG Rosenman, M Soltys, A Boxwala, M Castillo, V Carrasco, SM Pizer (1996). "A new technique for CT/MR image fusion for skull base imaging," *Skull Base Surgery*, pp. 141-146, 1996.
- (184) Furst JD, SM Pizer, DH Eberly (1996). "Marching cores: a method for extracting cores from 3D medical images," University of North Carolina Computer Science Department technical report TR96-003. *Proceedings Conference Mathematical Methods in Biomedical Image Analysis*, IEEE Catalog #96TB100056:124-130.
- (183) Aylward, S, SM Pizer, E Bullitt, D Eberly (1996). "Intensity ridge and widths for tubular object segmentation and description," University of North Carolina Computer Science Department technical report TR96-018. *Proceedings Conference on Mathematical Methods in Biomedical Image Analysis*, pp. 131-138, 1996.
- (182) Bullitt E, A Liu, S Aylward, M Soltys, J Rosenman, SM Pizer (1997). "Methods for displaying intracerebral vascular anatomy." *American Journal of Neuroradiology* **18**:417-420, 1997.
- (181) E. Bullitt, M Soltys, J Chen, JR Rosenman, SM Pizer (1996). "Three-dimensional reconstruction of intracranial vessels from biplane projection views," *Journal of Neuroscience Methods* **66**: 13-22, 1996.
- (180) McAuliffe M, D Eberly, DS Fritsch, EL Chaney, SM Pizer (1996). "Scale-space boundary evolution initialized by cores," *Proceedings Visualization in Biomedical Computing*, KH Höhne, R Kikinis, eds. Lecture Notes in Computer Science, Springer, **1131**:173-182.
- (179) Victoria Interrante, Henry Fuchs and Stephen Pizer (1996) "Illustrating Transparent Surfaces with Curvature-Directed Strokes", *Proceedings of IEEE Visualization '96*, pp. 211-218, 1996.
- (178) *Morse, BS, SM Pizer, DT Puff, C Gu (1995). "Zoom-invariant vision of figural shape: effects on cores of image disturbances," University of North Carolina technical report TR96-005. *Computer Vision and Image Understanding*, **69**:72-86, 1998.
- (177) Wilson, A, V Johnson, SM Pizer, D Fritsch, L Yu, E Chaney (1996). "Towards a Framework for Automated Image Analysis," *Proceedings 16th Leeds Annual Statistical Workshop: Image Fusion and Shape Variability Techniques*: 13-20. University of Leeds Press, Leeds, England, 1996.
- (176) Fritsch DS, EL Chaney, A Boxwala, MJ McAuliffe, S Raghavan, A Thall, JRD Earnhart (1995). "Core-based portal image registration for automatic radiotherapy treatment verification," *International Journal of Radiation, Oncology, Biology, Physics.*; special issue on Conformal Therapy, **33**(5):1287-1300, 1995.

Stephen M. Pizer
Curriculum Vitae

- (175) *Pizer SM (1995). "Cybermedicine: vision or fiction," invited paper, *Medizin der Zukunft — Neue Wege zur Gesundheit*, Wissenschaftszentrum Nordrhein-Westfalen, 1995.
- (174) Interrante V, H Fuchs, SM Pizer (1995). "Enhancing transparent skin surfaces with ridge and valley lines," *Proceedings IEEE Visualization*, pp. 52-59, 1995.
- (173) *Pizer SM, D Eberly, BS Morse, D Fritsch (1995). "Zoom-Invariant Vision of Figural Shape: The Mathematics of Cores," University of North Carolina technical report TR96-004. *Computer Vision and ImageUnderstanding*, **69**:55-71, 1998.
- (172) Burbeck CA, SM Pizer, BS Morse, D Ariely, GS Zauberman, JP Rolland (1994). "Linking object boundaries at scale: a common mechanism for size and shape judgments," University of North Carolina Computer Science Department technical report TR94-041. *Vision Research* **36**:361-372, 1996.
- (171) Fritsch DS, D Eberly, SM Pizer, MJ McAuliffe (1994). "Stimulated Cores and their Applications in Medical Imaging," University of North Carolina at Chapel Hill Department of Radiation Oncology technical report. *Information Processing in Medical Imaging 1995 (IPMI'95)*, pp. 365-368, 1994.
- (170) Puff DT, D Eberly, SM Pizer (1994). "Object-based interpolation via cores," *Medical Imaging '94: Image Processing, SPIE* **2167**:143-150, 1994.
- (169) Fritsch DS, D Eberly, SM Pizer, MJ McAuliffe (1994). "Stimulated Cores and Medical Applications," *Information Processing in Medical Imaging 1995 (IPMI'95)*, pp. 365-368, 1994.
- (168) Gauch JM, SM Pizer (1993). "Multiresolution analysis of ridges and valleys in gray-scale images," *IEEE Trans. PAMI* **15**(6):635-646, 1993.
- (167) *Burbeck CA, SM Pizer (1994). "Object representation by cores: identifying and representing primitive spatial regions," University of North Carolina Computer Science Department technical report TR94-048. *Vision Research*, **35**(13):1917-1930, 1995.
- (166) Beard DV, D Eberly, B Hemminger, SM Pizer, R Faith, C Kurak, M. Livingston (1993). "Interacting with Image hierarchies for fast & accurate object segmentation," *SPIE Proceedings Medical Imaging '94: Image Processing*, **2167**:10-17, 1994.
- (165) Puff DT, ED Pisano, KE Muller, RE Johnston, BM Hemminger, CA Burbeck, R McLelland, SM Pizer (1994). "A method for determination of optimal image enhancement for the detection of mammographic abnormalities," *Digital Imaging*, **7**(4):161-171, 1994.
- (164) Tracton G, EL Chaney, JG Rosenman, SM Pizer (1994). "MASK: combining 2D and 3D segmentation methods to enhance functionality," *SPIE Proceedings Mathematical Methods of Medical Imaging III*, 1994.
- (163) Beard DV, RE Faith, D Eberly, SM Pizer, C Kurak, RE Johnston (1989). "The magic crayon: an object definition and volume calculation testbed," *SPIE Medical Imaging VII: Image Processing*, 1993.

Stephen M. Pizer
Curriculum Vitae

- (162) Morse BS, SM Pizer, DS Fritsch (1994). "Robust Object Representation Through Object-Relevant Use of Scale," *Proceedings SPIE Medical Imaging '94: Image Processing*, **2167**, 104-115, 1994.
- (161) Fritsch DS, SM Pizer, EL Chaney, A Liu, S Raghavan, T Shah (1994). "Cores for image registration," *Proceedings SPIE Medical Imaging '94: Image Processing*, **2167**, 128-142, 1994.
- (160) *Pizer SM, S Murthy, DT Chen (1994). "Core-based boundary claiming," *Proceedings SPIE Medical Imaging '94: Image Processing*", **2167**:151-161, 1994.
- (159) *Pizer SM, CA Burbeck (1994). "Cores as the basis for object vision in medical images," *Proceedings SPIE Medical Imaging '94: Image Perception, Modeling the Human Observer*, **2166**:191-198, 1994.
- (158) *Pizer SM, CA Burbeck, DS Fritsch, BS Morse, A Liu, S Murthy, DT Puff (1993). "Human perception and computer image analysis of objects in images," *Proceedings Conference of the Australia Pattern Recognition Society (DICTA) I*: pp. 19-26, 1993.
- (157) Morse BS, SM Pizer, CA Burbeck (1994). "General shape and specific detail: context-dependent use of scale in determining visual form.," *Proceedings 2nd International Workshop on Visual Form*, 374-383, World Scientific, Singapore, 1994.
- (156) Fritsch, D. S., Pizer, S. M., Coggins, J. M., (1991). "A multiscale medial description of greyscale image structure," *Advances in Intelligent Robotic Systems*, SPIE.
- (155) Eberly D, RB Gardner, BS Morse, SM Pizer, C Scharlach (1994). "Ridges for image analysis," University of North Carolina Computer Science Department technical report TR93-055. *Journal of Mathematical Imaging and Vision*: **4**:351-371, 1994.
- (154) Eberly D, SM Pizer (1994). "Ridge flow models for image segmentation," technical report TR93-056, 1994. *Proceedings SPIE Medical Imaging '94: Image Processing*, **2167**: (7), 54-64, 1994.
- (153) Fritsch DS, SM Pizer, BS Morse, DH Eberly, A Liu (1994). "The multiscale medial axis and its applications in image registration," University of North Carolina technical report TR93-058. *Pattern Recognition Letters*, **15**:445-452, 1994.
- (152) Rosenman J, CA Roe, R Cromartie, KE Muller, SM Pizer. "Portal film enhancement: Technique and Clinical Utility," *International Journal of Radiation Oncology, Biology, Physics*, **25**:333-338, 1993.
- (151) Morse BS, SM Pizer, A Liu (1994). "Multiscale Medial Analysis of Medical Images," *Information Processing in Medical Imaging (IPMI '93)*, HH Barrett, AF Gmitro, eds., Lecture Notes in Computer Science, **687**:112-131, Springer-Verlag, 1993. In revised form in *Image and Vision Computing*, **12**(6):327-338, 1994.
- (150) *Pizer, SM, DS Fritsch, BS Morse, DH Eberly, A Liu (1993). "Multiscale Medial Axis Approaches for Object Definition and Registration in Medical Images," *Proceedings International Conference on Volume Image Processing*, Department of Radiology, University of Utrecht, The Netherlands, pp. 1-4, 1993.

Stephen M. Pizer
Curriculum Vitae

- (149) *Cromartie R, SM Pizer (1993). "Structure-sensitive adaptive contrast enhancement methods and their evaluation," *Image and Vision Computing*, **385**, Oct. 1993.
- (148) Snyder W, Y-S Han, G Bilbro, R Whitaker, SM Pizer (1994). "Image relaxation: restoration and feature extraction," *IEEE Trans. Pattern Analysis and Machine Intelligence*, pp. 620-624, 1994.
- (147) Gauch J, SM Pizer (1991). "The intensity axis of symmetry and its application to image segmentation", *IEEE Trans. Pattern Analysis and Machine Intelligence*, 1991.
- (146) Puff DT, R Cromartie, ED Pisano, K Muller, RE Johnston, SM Pizer (1992). "Evaluation and optimization of contrast enhancement methods for medical images," *Visualization in Biomedical Computing*, SPIE **1808**:36-346, 1992.
- (145) Whitaker RT, SM Pizer (1993). "Geometry-based Image Segmentation using Anisotropic Diffusion". *Shape in picture: The mathematical description of shape in greylevel images*", eds. Y.-L. O, A. Toet, H.J.A.M. Heijmans, D.H. Foster, P. Meer, **126**:641-650, Springer Verlag, Heidelberg, 1993 (Proceedings of NATO Advanced Research Workshop).
- (144) *Pizer SM, C Burbeck, J Coggins, D Fritsch, B Morse (1992). "Object Shape before Boundary Shape: Scale-space Medial Axes". Presented at *Shape in Picture*, (NATO Advanced Research Workshop), 1992. *Journal of Mathematical Imaging and Vision*, **4**:303-313, 1994.
- (143) *Chaney E, SM Pizer (1992). "Defining Anatomical Structures from Medical Images," *Seminars in Radiation Oncology*, **1**(4):215-225, 1992.
- (142) Yoo T, U Neumann, H Fuchs, T Cullip, J Rhoades, R Whitaker, SM Pizer (1992). "Direct Visualization of Volume Data," *IEEE Computer Graphics and Applications*, **12**(4): 63-71, Jul. 1992.
- (141) Klymenko V, RE Johnston, SM Pizer (1992). "Visual Increment and Decrement Threshold Curves as a Function of Luminance Range and Noise in Simulated Computed Tomographic Scans," *Investigative Radiology*, February 1992.
- (140) Fritsch D, J Coggins, SM Pizer (1991). "A Multiscale Medial Description of Greyscale Image Structure," *Proceedings SPIE Advances in Intelligent Robotic Systems*, Nov. 1991.
- (139) Gauch J, SM Pizer (1992). "The Intensity Axis of Symmetry and Its Application to Image Segmentation," To appear in *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 1992.
- (138) Whitaker RT, SM Pizer (1993). "A Multi-scale Approach to Nonuniform Diffusion," UNC Technical Report 91-040. *Computer Vision, Graphics, Image Processing: Image Understanding*, **57**(1):99-110, Jan. 1993.
- (137) Beard D, RE Johnston, E Pisano, B Hemminger, SM Pizer (1991). "A Radiology Workstation for Mammography: Preliminary Observations, Eyetracker Studies, and Design," *SPIE Vol. 1446 Medical Imaging V PACS Design and Evaluation*, pp. 289-296, Jul. 1991.

Stephen M. Pizer
Curriculum Vitae

- (136) Yoo T, U Neumann, H Fuchs, T Cullip, J Rhoades, R Whitaker, SM Pizer (1992). "Achieving Direct Volume Visualization with Interactive Semantic Region Selection," UNC Technical Report #91-012. *Proceedings Visualization '91*, IEEE, pp. 58-67, 1991 and *IEEE Computer Graphics and Applications*, Jul. 1992.
- (135) *Pizer SM, JM Coggins, CA Burbeck (1991). "Formation of Image Objects in Human Vision," *Computer Assisted Radiology* (Proceedings CAR '91) 535-542, Springer-Verlag, Berlin, 1991.
- (134) Cromartie R, SM Pizer (1991). "Edge-Affected Context for Adaptive Contrast Enhancement," *Information Processing in Medical Image (IPMI XII)*, eds. , A.C. F. Colchester, D.J. Hawkes, Lecture Notes in Computer Science, **511**:474-485, Springer-Verlag, 1991.
- (133) Lin W, SM Pizer, VE Johnson (1991). "Surface Estimation in Ultrasound Images," *Information Processing in Medical Image (IPMI XII)*, 1991. Lecture Notes in Computer Science, eds. , A.C. F. Colchester, D.J. Hawkes, **511**:285-299, Springer-Verlag, 1991.
- (132) *Cromartie R, SM Pizer (1990). "Adaptive Contrast Enhancement of Medical Images," Distributed as supplement to *Proceedings North Sea conference on Biomedical Engineering*, November 1990.
- (131) Johnston RE, BC Yankaskas, JR Perry, SM Pizer, DJ Delany, LA Parker, (1990). "Agreement Experiments: A Method for Quantitatively Testing New Medical Image display Approaches," *SPIE, Medical Imaging 90*, **1234**:621-630, Feb. 1990.
- (130) *Fishman EK, D Magid, DR Ney, EL Chaney, SM Pizer, JG Rosenman, DN Levin, MW Vannier, JE Kuhlman, DD Robertson, (1991). "Three Dimensional Imaging: The State of the Art," *Radiology*, **191**(2):321-337, Nov. 1991.
- (129) Levoy M, H Fuchs, J Rosenman, EL Chaney, GW Sherouse, V Interrante, J Kiel, SM Pizer (1990). "Volume Rendering in Radiation Treatment Planning," UNC Technical Report #90-005. *IEEE Proceedings First Conference on Visualization in Biomedical Computing*, 4-10, May, 1990.
- (128) Davis RE, M Levoy, JG Rosenman, H Fuchs, SM Pizer, A Skinner, HC Pillsbury (1990). "Three-Dimensional High-Resolution Rendering of CT and MRI Data: Applications to Otolaryngology - Head and Neck Surgery," *Laryngoscope*, October 1990.
- (127) Klymenko V, SM Pizer, RE Johnston (1990). "Visual Psychophysics and Medical Imaging: Non-Parametric Adaptive Method for Rapid Threshold Estimation in Sensitivity Experiments," *IEEE Transactions on Medical Imaging*, **9**(4):353-365, 1990.
- (126) *Pizer SM, BM ter Haar Romeny (1991). "Fundamental Properties of Medical Image Perception," *Journal of Digital Imaging*, **4**(4):1-20, Feb. 1991.
- (125) *Cullip TJ, RE Fredericksen, SM Pizer (1990). "Toward Interactive Object Definition in 3D Scalar Images," *3D Imaging in Medicine: Algorithms, Systems, Applications*, K.H.Höhne, H. Fuchs, S.M. Pizer, pp. 83-106, Springer-Verlag, Berlin, 1990.

Stephen M. Pizer
Curriculum Vitae

- (124) *Johnston RE, JP Ericksen, BC Yankaskas, KE Muller, SM Pizer (1990). "Contrast-Limited Adaptive Histogram Equalization: Speed and Effectiveness," *Proceedings First Conference on Visualization in Biomedical Computing*, IEEE Cat. #90TH0311-1, pp. 337-345, 1990.
- (123) *Fredericksen RE, JM Coggins, TJ Cullip, SM Pizer (1990). "Interactive Object Definition in Medical Images Using Multiscale, Geometric Image Descriptions," *Proceedings First Conference on Visualization in Biomedical Computing*, IEEE Cat. #90TH0311-1, pp. 108-114, 1990.
- (122) Cullip TJ, RE Fredericksen, JM Gauch, SM Pizer (1990). "Algorithms for 2D and 3D Image Description Based on the IAS," *Proceedings First Conference on Visualization in Biomedical Computing*, IEEE Catalog #90TH0311-1, pp. 102-107, 1990.
- (121) *Pizer SM, Gauch JM, TJ Cullip, RE Fredericksen (1990). "Descriptions of Intensity Structure via Scale and Symmetry," *Proceedings First Conference on Visualization in Biomedical Computing*, IEEE Catalog #90TH0311-1, pp. 94-101, 1990.
- (120) Ericksen JP, JD Austin, SM Pizer (1990). "MAHEM: A Multiprocessor Engine for Fast Contrast-Limited Adaptive Histogram Equalization," *Medical Imaging IV, SPIE Proceedings*, **1233**:322-333, 1990.
- (119) LM Lifshitz, SM Pizer (1990). "A Multiresolution Hierarchical Approach to Image Segmentation Based on Intensity Extrema," *IEEE Transactions PAMI*, **12**(6):529-540, June 1990. Also see Chapters.
- (118) *Pizer SM, Gauch JM, JM Coggins, RE Fredericksen, TJ Cullip, VL Interrante (1989). "Multiscale, Geometric Image Descriptions for Interactive Object Definition," *Mustererkennung 1989* (Proceedings 11th Symposium of DAGM [The German Association for Pattern Recognition]), *Informatik-Fachberichte 219*: 229-239, Springer-Verlag, 1989.
- (117) *SM Pizer, Beard DV (1989). "Medical Image Workstations: Functions and Implementation," *Journal of Digital Imaging*, **2**(4):185-193, 1989.
- (116) Oliver WR, SM Pizer, RB Gardner, KB Pryzwansky (1991). "Evaluation of Cytologic Deformation by Boundary-Driven Energy Minimization," *Information Processing in Medical Imaging, XI*, D. A. Ortendahl, J. Llacer, eds., Wiley-Liss, pp. 355-368, 1991.
- (115) *Levoy M, H. Fuchs, SM Pizer, J Rosenman (1989). "Volume Rendering for Display of Multiple Organs, Treatment Objects, and Image Intensities," *Science and Engineering of Medical Imaging, SPIE Proceedings*, **1137**:92-97, 1989.
- (114) *Pizer SM, H Fuchs, M Levoy, J Rosenman, R Davis, J Renner (1989). "3D Display with Minimal Predefinition," *Computer Assisted Radiology*, Springer-Verlag, Berlin, pp.723-736, 1989.
- (113) Fuchs H, M Levoy, SM Pizer (1989). "Interactive Visualization of 3D Medical Data," *IEEE Computer*, **22**(8):46-52, Aug. 1989. Also UNC Department of Computer Science Technical Report #TR89-007.

Stephen M. Pizer Curriculum Vitae

- (112) Fuchs H, M Levoy, SM Pizer, JG Rosenman (1989). "Interactive Visualization and Manipulation of 3D Medical Image Data," *Proceedings of National Computer Graphics Association Annual Conference*. **1**:118-131, 1989.
- (111) Mills P, H Fuchs, SM Pizer, J Rosenman (1989). "IMEX: A Tool for Image Display and Contour Management in a Windowing Environment," *SPIE Proceedings: Medical Imaging III*, **1092**:132-142, 1989.
- (110) Gauch J, SM Pizer (1988). "Image Description via the Multiresolution Intensity Axis of Symmetry". *ICCV Proceedings*, IEEE Catalog #88CH2664-1, pp. 269-274, 1988.
- (109) *Todd-Pokropek AE, SM Pizer (1992). "Multiscale Methods and the Segmentation of Medical Images," *Medical Images: Formation, Handling and Evaluation*, M. A. Viergever, eds. Springer-Verlag, Berlin, pp. 119- 143, 1992.
- (108) Rosenman J, G Sherouse, H Fuchs, SM Pizer, C Mosher, K Novins, J Tepper (1989). "Three-Dimensional Display Techniques in Radiation Therapy Treatment Planning," *International Journal of Radiation Oncology Biology Physics*, **16**(1), 1989.
- (107) Beard DV, SM Pizer (1988). "Medical Image Workstations: State of Science and Technology," UNC Technical Report #88-016, Presented at ACR Workshop on Visualization Science in Engineering and Computing, Apr. 1988.
- (106) *Pizer SM, Gauch J, L Lifshitz, William Oliver (1988). "Image Description Via Annihilation of Essential Structures," UNC Technical Report #88-001 Revised. Submitted to *IEEE -Trans PAMI*, Mar. 1988.
- (105) Zimmerman J, E Staab, J Perry, W McCartney, B Brenton, SM Pizer (1988). "An Evaluation of the Effectiveness of Adaptive Histogram Equalization for Contrast Enhancement," *IEEE-Trans MI*, **7**(4):304-312, 1988.
- (104) Tsui BMW, JR Perry, DR Gilland, VL Interrante, H Fuchs, WH McCartney, SM Pizer (1988). "Simultaneous Three-Dimensional Display of Anatomical and Functional Information Obtained with SPECT," *Imaging Hardware and Software for Nuclear Medicine*, M.A. King, R.E. Zimmerman, J.M. Links, pp. 197-206, Feb. 1988.
- (103) Tsui BMW, JL Hendricks, JR Perry, VL Interrante, H Fuchs, SM Pizer, WH McCartney (1989). "Three-Dimensional Display Methods for Image Data Obtained with SPECT," *European Journal of Nuclear Medicine and Molecular Imaging*, **15**(8):558, 1989.
- (102) *Fuchs H, SM Pizer, JL Creasy, JB Renner, JG Rosenman (1988). "Interactive, Richly Cued Shaded Display of Multiple 3-D Objects in Medical Images," *SPIE Proceedings*, **914**(Part B):842-849, 1988.
- (100) *Pizer SM, Gauch JM, LM. Lifshitz(1988). "Interactive 2-D and 3-D Object Definition in Medical Images Based on Multiresolution Image Descriptions," *SPIE Proceedings*, **914** (Part B):438-449, 1988.
- (99) *Pizer SM, Johnston R, D Rogers, D Beard, (1987). "Effective Presentation of Medical Images," *Radiographics*, **7**(6):1267-1274; UNC Tech Report 87-026, 1987.

Stephen M. Pizer Curriculum Vitae

- (98) Lifshitz LM, SM Pizer (1988). "A Multiresolution Hierarchical Approach to Image Segmentation Based on Intensity Extrema," *Information Processing in Medical Imaging* (IPMI, June 1987), pp.107-130, Plenum, 1988.
- (97) Gauch J, W Oliver, SM Pizer (1988). "Multiresolution Shape Descriptions and Their Applications in Medical Imaging," *Information Processing in Medical Imaging* (IPMI X, June 1987), pp. 131-149, Plenum, 1988.
- (96) Austin JD, SM Pizer (1988). "A Multiprocessor Adaptive Histogram Equalization Machine," *Information Processing in Medical Imaging* (IPMI X, June 1987), pp. 375-392, Plenum, 1988.
- (95) Stephen Pizer and Frank Crow, "Proceedings of the Workshop on Interactive 3D Graphics," 1987.
- (94) *Pizer SM, Fuchs H (1987). "Three Dimensional Image Presentation Techniques in Medical Imaging," *Proceedings International Symposium on Computer Assisted Radiology*, Berlin, July 1-4, 1987 (Springer-Verlag) and Imaging and Visual Documentation in Medicine, *Proceedings Documed Europe 87*:783-792, Elsevier Science Publishers, Amsterdam 1987.
- (93) Beard D, SM Pizer, R Cromartie, S Desirazu, S Ramanathan, R Rubin (1987). "Prototype Single-Screen PACS Console Development Using Human Computer Interaction Techniques," *SPIE Proceedings 767*:646-653, 1987.
- (92) Rogers D, R Johnston, J Creasy, D Beard, B Hemminger, J Perry, SM Pizer (1987). "How to Evaluate A Medical Imaging Display Workstation," *SPIE Proceedings 767*:616-621, 1987.
- (91) Sherouse G, J Rosenman, H McMurry, SM Pizer, E Chaney, (1987). "Automatic Digital Contrast Enhancement of Radiotherapy Films,". *International Journal of Radiation Oncology Biology Physics*, **13**:801-806, 1987. Winner of AAPM, Southeast Chapter Award.
- (90) Mosher Jr CE, GW Sherouse, PH Mills, KL Novins, SM Pizer, JG Rosenman, EL Chaney (1986). "The Virtual Simulator," *Proceedings 1986 Workshop on Interactive 3D Graphics*, ACM Press, 1986.
- (89) *Pizer SM, WR Oliver, JM Gauch, SH Bloomberg, Vieregger MA, (1988). "Hierarchical Figure-Based Shape Description For Medical Imaging," *Mathematics and Computer Science in Medical Imaging*, NATO ASI Series, Series F: Computer and Systems Sciences, **39**:365-388, Springer-Verlag,1988.
- (88) Rogers DC, and RE Johnston, SM Pizer (1987). "The Effect of Ambient Light on Electronically Displayed Medical Images as Measured by Luminance Discrimination Thresholds," *Journal of Optical Society of America*, **4**(5):976-983, 1987.
- (87) CE Mosher Jr, GW Sherouse, PH Mills, KL Novins, SM Pizer, JG Rosenman, and EL Chaney, "The Virtual Simulator," *Proceedings Workshop on Interactive 3D Graphics*, 1986.
- (86) *Pizer SM, Oliver WR, SH Bloomberg (1986). "Hierarchical Shape Description Via The Multiresolution Symmetric Axis Transform," *IEEE Transactions PAMI 9*(4):505-511, 1987; UNC Technical Report 86-016, 1986.

Stephen M. Pizer Curriculum Vitae

- (85) *Pizer SM , Amburn EP, JD Austin, R Cromartie, A Geselowitz, T Greer, B ter Haar Romeny, JB Zimmerman, K Zuiderveld, (1986). "Adaptive Histogram Equalization and Its Variations," *Computer Vision, Graphics, and Image Processing*, **39**:355-368, September 1987; UNC Technical Report #86-013, 1986.
- (84) *Pizer SM, Austin JD, R Cromartie, A Geselowitz, BH ter Haar Romeny (1986). "Algorithms for Adaptive Histogram Equalization," *Proceedings International Workshop on Physics and Engineering of Computerized Multidimensional Imaging and Processing*, SPIE 671, 132-138, 1986.
- (83) Hemminger BM, BG Thompson, SM Pizer, P Stancil (1986). "The Ongoing Implementation of a Prototype Medical Communications System at the University of North Carolina," *Proceedings SPIE: Medicine XIV/PACS IV*, 626 574-580, 1986.
- (82) Johnston RE, DC Rogers, BM Hemminger, SM Pizer, JL Creasy, JR Perry, EV Staab, J. T. Curnes, L. A. Parker (1986). "A Multiscreen Multiple Image Display Console," *Proceedings SPIE: Medicine XIV/PACS IV*, SPIE 626 447-450, 1986.
- (81) *Pizer SM, Austin JD, JR Perry, HD Safrit, JB Zimmerman (1986). "Adaptive Histogram Equalization for Automatic Contrast Enhancement of Medical Images," *Proceedings SPIE: Medicine XIV/PACS IV*, SPIE626 , 242-250, 1986.
- (80) Chaney E, J Rosenman, G Sherouse, D Bourland, H Fuchs, SM Pizer, E Staab, M Varia, S Mahaley (1986). "Three Dimensional Display of Brain and Prostate Implants," *Echo*, 2 93-99, 1986.
- (79) *Pizer SM , JJ Koenderink, L Helmink, (1986). "A Multiresolution Image Segmentation Algorithm Based on a Topological Description of Image Structure," *First Quinquennial Review*, Dutch Society for Pattern Recognition and Image Processing, 161-181, Utrecht, The Netherlands: Lustrum Publications, 1986.
- (78) *Pizer SM, H Fuchs, C Mosher, L Lifshitz, GD Abram, S Ramanathan, BT Whitney, JG Rosenman, EV Staab, EL Chaney, G Sherouse (1986). "3D Shaded Graphics in Radiotherapy and Diagnostic Imaging," *Proceedings Computer Graphics '86*, National Computer Graphics Association, III 107-113, 1986.
- (77) *Pizer SM, JB Zimmerman (1985). "Image Structure and Multiresolution Stack Models: perception, quality, and contrast requirements," *Proceedings 25th Fall Symposia - Imaging*, November 17-22, 1985, Society of Photographic Scientists and Engineers, 215-218, 1985.
- (76) Zimmerman JB, SM Pizer (1985). "Evaluation of the Effectiveness of Adaptive Histogram Equalization," *Proceedings 25th Fall Symposia - Imaging*, November 17-22, 1985, Society of Photographic Scientists and Engineers, 189-190, 1985.
- (75) Johnston RE, D. C. Rogers, SM Pizer (1985). "Effect of the Observer and Ambient Light on Perceptual Linearization of Video Monitors," *Proceedings 25th Fall Symposia - Imaging*, November 17-22, 1985, Society of Photographic Scientists and Engineers, 191-194, 1985.
- (74) Perry JR, RE Johnston, SM Pizer, DD Loendorf, DC Rogers, BC Thompson, DM Parrish, BC Brenton, EV Staab (1985). "PACS and the Digital Storage of Medical Images," *Proceedings on First International Conference on Supercomputer Systems*, December 16-20, 1984, IEEE Computer Society, 1985.

Stephen M. Pizer Curriculum Vitae

- (73) *Pizer SM, JJ Koenderink, LM Lifshitz, L Helmink, ADJ Kaasjager (1985). "An Image Description for Object Definition, Based on Extremal Regions in the Stack," *Information Proceedings in Medical Imaging*, S. L. Bacharach, ed., 24-37, Martinus Nijhoff, Dordrecht, The Netherlands, 1985.
- (72) *Pizer SM (1985). "Systems for 3D Display in Medical Imaging," *Pictorial Information Systems in Medicine*, K. H. Hoehne, ed. 235-250, Springer-Verlag, Berlin, 1985.
- (71) Chaney E, H. Fuchs, S. Pizer, J. Rosenman, G. Sherouse, E. Staab, M. Varia, SM Pizer (1985). "A Three Dimensional Imaging System For Radiotherapy Treatment Planning," *Medical & Biological Engineering & Computing*, Journal of the International Federation of Medical & Biological Engineering, Volume 23 Supplement Part 2, 1985, Proceedings of the XIV International Conference on Medical and Biological Engineering and VII International Conference on Medical Physics, 951-952. Espoo, Finland, Aug. 11-16, 1985.
- (70) * Pizer SM (1985). "Psychovisual Issues in the Display of Medical Images," *Pictorial Information Systems in Medicine*, K. H. Hoehne, ed., 211-234, Springer-Verlag, Berlin, 1985.
- (69) Johnston RE, JB Zimmerman, and D. C. Rogers, SM Pizer (1985). "Perceptual Standardization," *Proceedings 3rd International Conference on Picture Archiving and Communication Systems (PACS III) for Medical Applications* 536, February 7-8, 1985, 44-49, SPIE, 1985.
- (68) *Pizer SM, ER Heinz, J Fuchs, D Osborne, B Drayer, A Yeates, H Fuchs (1984). "Examination of the Extracranial Carotid Bifurcation by Thin-Section Dynamic CT: Direct Visualization of Intimal Atheroma in Man (Part 2)," *American Journal of Neuroradiology* 5, pp. 361-366, Jul./Aug. 1984.
- (67) Heinz ER, SM Pizer, H Fuchs, EK Fram, P Burger, DP Drayer, Dr. R Osborne, (1984). "Examination of the Extracranial Carotid Bifurcation by Thin-Section Dynamic CT: Direct Visualization of Intimal Atheroma in Man (Part 1)," *American Journal of Neuroradiology* 5, 355-359, July/August 1984.
- (66) Mills PH, H Fuchs, SM Pizer (1984). "High-Speed Interaction on a Vibrating Mirror 3D Display," *SPIE Proceedings Conference on Processing and Display of Three-Dimensional Data II*, SPIE 507: 1984.
- (65) Jaques P, F DiBianca, SM Pizer, F Kohout, L Lifshitz, D Delany (1985). "Quantitative Digital Fluorography: Computer vs Human Estimation of Vascular Stenoses," *Investigative Radiology* 20(1):45-52, Jan.-Feb. 1985.
- (64) Austin JD, BMW Tsui, DC Strickland, EV.Staab, CL Partain, SM Pizer (1984). "Three-Dimensional Display of NMR Images," in *Technology of Nuclear Magnetic Resonance, 14th Annual Symposium on Sharing of Computer Programs and Technology in Nuclear Medicine*, Society of Nuclear Medicine, 193-203, Jun. 1984.
- (63) *LR Nackman, Pizer SM (1985). "Three-Dimensional Shape Description Using the Symmetric Axis Transform, I: Theory," *IEEE Trans PAMI* 7(2):187-202, Mar. 1985.
- (62) *Fuchs H, SM Pizer (1984). "Systems for Three-Dimensional Display of Medical Images," *Proceedings International Joint Alpine Symposium on Medical Computer Graphics and Image Communications and Clinical Advancements in Neuroscience CT/NMR*, IEEE Computer Society [IEEE Catalog No 84CH2006-5], 1-6, Feb. 1984.

Stephen M. Pizer Curriculum Vitae

- (61) de Graaf CN, A Toet, JJ Koenderink, P Zuidema, PP van Rijk, SM Pizer (1984). "Pyramid Segmentation of Medical 3D Images," *Proceedings International Joint Alpine Symposium on Medical Computer Graphics and Image Communications and Clinical Advancements in Neuroscience CT/NMR*, IEEE Computer Society [IEEE Catalog No 84CH2006-5], 71-77, Feb. 1984.
- (60) *Zimmerman J, E Staab, SM Pizer (1984). "Adaptive Grey Level Assignment in CT Scan Display," *Journal of Computer Assisted Tomography*. **8**(2):300-305, 1984.
- (59) Konstantinow G, SM Pizer, RH Jones(1984). "Decontamination of Crosstalk in First-pass Radionuclide Angiocardigraphy," *Information Processing in Medical Imaging*, 8th IPMI Conference, Aug. 29 - Sept. 2, 1983, 46-62, Martinus Nijhoff Publishers, Boston, MA, 1984.
- (58) *Fuchs H, ER Heinz, EV Staab, EL Chaney, JG Rosenman, JD Austin, SH Bloomberg, ET MacHardy, PH Mills, DC Strickland, SM Pizer (1984). "Interactive 3D Display of Medical Images," published in *Information Processing in Medical Imaging* (Proceedings 8th International Conference), editor F. Deconinck, 513-526, Martinus Nijhoff Publishers, Brussels, Belgium, 1984.
- (57) Perry R, BG Thompson, EV Staab, SM Pizer, RE Johnston (1983). "Performance Features for a PACS Display Console," *Computer* **16**(8):51-56, IEEE, Aug. 1983 .
- (56) Konstantinow G, SM Pizer, RH Jones (1983). * "Decontamination of Time-Activity Curves from First-Pass Radionuclide Angiocardigraphic Data," *Proceedings of the 1983 Symposium on Emission Computed Tomography and Medical Data Processing*, Society of Nuclear Medicine, San Francisco, California Feb. 6-7, 1983.
- (55) Fuchs HE, SM Pizer, R Heinz, SH Bloomberg, LC Tsai, DC Strickland (1982). "Design of and Image Editing with a Space-Filling 3-D Display Based on a Standard Raster Graphics Systems," *Proceedings on Processing and Display of Three-Dimensional Data*, **367**:117-127 editor J.J. Pearson, SPIE Bellingham, WA.
- (54) *Pizer SM, JB Zimmerman, RE Johnston (1982). "Contrast Transmission in Medical Image Display," *Proceedings of ISMIII '82* (International Symposium on Medical Imaging and Image Interpretation), IEEE Computer Society (IEEE Catalog No. 82CH1804-4), 2-9, October 1982.
- (53) *Pizer SM, JB Zimmerman (1983). "Color Display in Ultrasonography," *Ultrasound in Medicine and Biology* **9**(4):331-345, 1983.
- (52) Konstantinow G, RH Jones, SM Pizer (1982). "Decontamination of Time-Activity Curves from First-Pass Radionuclide Angiocardigraphic Data," *Proceedings IEEE MedComp*, 1982.
- (51) * Fuchs H, ER Heinz, LC Tsai, SH Bloomberg, SM Pizer (1982). "Adding a True 3-D Display to a Raster Graphic System," *IEEE Computer Graphics and Applications*, **2**(7):73-78, Sept. 1982.
- (50) *Pizer SM, JB Zimmerman, RE Johnston (1982). "Concepts of the Display of Medical Images," *IEEE Transactions in Nuclear Science*, **NS-29**(4):1322-1330, Aug. 1982.

Stephen M. Pizer
Curriculum Vitae

- (49) *Pizer SM, H Fuchs, ER Heinz, SH Bloomberg, LC Tsai (1982). "Varifocal Mirror Display of Organ Surfaces from CT Scans," *Proceedings of the Third World Congress of Nuclear Medicine and Biology*, **II**:2177-2180, Pergamon, Paris, Aug. 1982.
- (48) *Pizer SM, RE Johnston, JB Zimmerman, FH Chan (1982). "Contrast Perception with Video Displays," *Picture Archiving and Communication Systems (PACS) for Medical Applications*, Part 1, 223-230, SPIE 318, 1982.
- (47) Thompson BG, DJ Anderson, EL Chaney, DJ Delany, FA DiBianca, WB Guilford, PF Jaques, RE Johnston, WH McCartney, SM Pizer, JH Scatliff, EV Staab, DB Washburn (1982). "A Medical Image Communication System: Expansion from a Prototype at the University of North Carolina," *Picture Archiving and Communication Systems (PACS) for Medical Applications*, Part 1, **318**:223-230, SPIE, 1982.
- (46) Staab EV, DJ Anderson, EL Chaney, DJ Delany, FA DiBianca, WB Guilford, PF Jaques, RE Johnston, WH McCartney, SM Pizer, JH Scatliff, BG Thompson, DB Washburn (1982). "A Medical Image Communication System: Plan, Management, and Initial Experience with a Prototype," *Picture Archiving and Communication Systems (PACS) for Medical Applications*, Part 1, **318**:223-230, SPIE, 1982.
- (45) RM Motley, SM Pizer (1982). *"Rate Estimation in a Biexponential Uptake-Washout Poisson Process," *Computers and Biomedical Research*, **15**(3):203-211, June 1982.
- (44) E. Ralph Heinz, H Fuchs, L.D. Tsai, D. Osborne, S. Bloomberg, and B.P., Drayer, SM Pizer (1982). "Intravenous Carotid Imaging by CT Reconstruction," American Roentgen Ray Society Meeting, New Orleans, Louisiana, May 10-14, 1982.
- (43) Nackman LR, SM Pizer (1981). "Three-Dimensional Shape Description Using the Symmetric Axis Transform," *Medical Image Processing*, (Proceedings IPMI7, Stanford, California, June 1981), pp. 363-396.
- (42) *Pizer SM (1983). "An Automatic Intensity Mapping for the Display of CT Scans and Other Images," *Information Processing in Medical Imaging* (Proceedings IPMI7, Stanford, California, June 1981), 1983, pp. 276-309.
- (41) *Pizer SM (1981). "Intensity Mappings: Linearization, Image-Based, User-Controlled," *Display Technology II*, SPIE, Bellingham, Washington, pp. 21-27, 1981.
- (40) *Pizer SM (1982). "Intensity Mappings for the Display of Medical Images," *Functional Mapping of Organ Systems and other Computer Topics*, Society of Nuclear Medicine, 1981.
- (39) *Pizer SM (1981). "Intensity Mappings to Linearize Display Devices," *Computer Graphics and Image Processing*, 17, pp. 262-268, 1981.
- (38) McAllister DF, SM Pizer (1980). "Applications of Root Finding Methods for Discrete Rational Chebyshev Approximation," *Proceedings 18th Annual Southeast Regional ACM Conference*, ACM, Order No. 405800, pp. 99-102, 1980.

Stephen M. Pizer Curriculum Vitae

- (37) *Pizer SM, Chan FH (1980). "Evaluation of the Number of Discernible Levels Produced by a Display," *Traitement Des Informations en Imagerie Medicale* (Information Processing in Medical Imaging, July 1979), R. DiPaola and E. Kahn, Editions INSERM, Paris, pp. 561-580, 1980.
- (36) *Pizer SM, Fuchs Henry, Jon S. Cohen, Frederick P. Brooks, Jr. (1980). "A Three-Dimensional Display for Medical Images from Slices," *Traitement Des Informations en Imagerie Medicale* (Information Processing in Medical Imaging, July, 1979.), R. DiPaola and E. Kahn, eds., Editions INSERM, Paris, pp. 581-602, 1980.
- (35) *Pizer SM, Todd-Pokropek AE (1978). "Improvement of Scintigrams by Computer Processing," *Seminars in Nuclear Medicine*, **8**(2) pp. 125-146, 1978.
- (34) Todd-Pokropek AE, D. Plummer, SM Pizer (1978). "Modularity and Command Languages in Medical Computing," *Information Processing in Medical Imaging* (Proceedings IPMI5, Nashville, Tennessee, June 1977), p. 426, ORNL/BCTIC-2, U.S. Department of Commerce, Springfield, VA, 1978.
- (33) Moore ML, SM Pizer (1978). "Algorithms for EKG-Gated Cardiac Scintigraphy with High Frame Rate and Rapid Turn-Around," *Information Processing in Medical Imaging* (Proceedings IPMI5, Nashville, Tennessee, June 1977), p. 389, ORNL/BCTIC-2, U.S. Department of Commerce, Springfield, VA, 1978.
- (32) Todd-Pokropek AE, SM Pizer (1977). "Noise Character in Processed Scintigrams," *Biomedical Computing*, W. J. Perkins, ed., pp. 198-213. Pitman Medical Publishing Co., Ltd., London, 1977.
- (31) *Pizer SM (1977). Section in panel discussion on Display Systems, *Proceedings 7th Symposium on Sharing of Computer Programs and Technology in Nuclear Medicine*, (Atlanta, GA, 25-26 January 1977), Society of Nuclear Medicine, Inc., CONF-770101, USERDA, 1977 pp. 46-48.
- (30) *Pizer SM, Todd-Pokropek AE (1977). "Ideal Displays in Nuclear Medicine Imaging," *Proceedings 7th Symposium on Sharing of Computer Programs and Technology in Nuclear Medicine*, (Atlanta, GA, 25-26 January 1977), Society of Nuclear Medicine, CONF-770101, USERDA, 1977, pp. 32-35.
- (29) *Pizer SM, Chan FH, J.M. Fullton, R.E. Johnston, H.H. Lane, Jr (1976). "A Medical Imaging Display System - Ultrasonography", *Proceedings SPIE: Application of Optical Instrumentation in Medicine V*, (September 1976, Washington, D.C.), pp. 354-360, **96**, ISBN 0-89252-123-6, SPIE, Palos Verdes, CA, 1976.
- (28) *Pizer SM, Todd-Pokropek AE (1977). "Displays in Scintigraphy," *Medical Radionuclide Imaging* (Proceedings International Symposium on Medical Radionuclide Imaging, Los Angeles, October 1976), IAEA-SM-210/307, IAEA, Vienna, **1**:505-537.
- (27) *Pizer SM, Moore ML, L.R. Witherspoon, S. Shuler (1976). "EKG-Gated Cardiac Scintigraphy," Proceedings DECUS Conference, Las Vegas, Dec. 1976.
- (26) * Chan FH, SM Pizer (1976). "An Ultrasonogram Display System Using a Natural Color Scale," *Journal of Clinical Ultrasound* **4**(5): 335-338, Oct. 1976.
- (25) *Pizer SM, Todd-Pokropek AE (1976). "Noise Character in Processed Scintigrams," *Information Processing in Scintigraphy* (Proceedings of IVth International Conference on Information Processing in

Stephen M. Pizer
Curriculum Vitae

Scintigraphy), Orsay, France, July 1975, pp. 1-16, edited by C. Raynaud and A. Todd-Pokropek. Commissariat a l'Energie Atomique, Dept. de Biologie, Service Hospitalier Frederic Joliot, Orsay, France, Mar. 1976.

(24) Gustafsson T, SM Pizer (1976). "Non-Stationary Metz-Filtering," *Information Processing in Scintigraphy* (Proceedings of IVth International Conference on Information Processing in Scintigraphy), Orsay, France, July 1975, pp. 56-65, edited by C. Raynaud, M.D. and A. Todd-Pokropek. Commissariat a l'Energie Atomique, Dept. de Biologie, Service Hospitalier Frederic Joliot, Orsay, France, Mar. 1976.

(23) Alpert NM, C.A. Burnham, L.A. Deveau, J.E. Correll, D.A. Chesler, SM Pizer, G.L. Brownell (1975). "NUMEDICS: A System for On-Line Data Processing in Nuclear Medicine," *Journal of Nuclear Medicine* **16**: 386-392. May 1975.

(22) * Pizer SM (1975). "Approximation for Parametric Imaging in Nuclear Medicine," *Proceedings Southeast Regional ACM Computer Conference*, Raleigh, N.C., pp. 1-10, Apr. 14-16, 1975.

(21) * Pizer SM (1975). "Display of Medical Images," *Proceedings Fifth Symposium on Sharing of Computer Programs and Technology in Nuclear Medicine*, pp. 14-19, Doc. CONF-750124, U.S.A.E.C. Division of Technological Information, Oak Ridge, 1975.

(20) Raynaud C, A.E. Todd-Pokropek, D. Comar, SM Pizer, A. Kacparek, M. Maziere, C. Marazano, C. Kellershohn (1975). "A Method for Investigation of Regional Variations of the Cerebral Uptake Rate of [¹¹C] Labelled of Psychotropic Drugs in Man," *Dynamic Studies with Radioisotopes in Clinical Medicine and Research 1*, pp. 45-59, Knoxville 1974. I.A.E.A., Vienna, 1975.

(19) * Pizer SM, Todd-Pokropek AE (1974). "Processing of Noisy Functional Images," *Proceedings First World Congress of Nuclear Medicine*, pp.161-163. World Federation of Nuclear Medicine and Biology, Tokyo, 1974.

(18) *Pizer SM, Correia JA, D.A. Chesler, C.E. Metz (1973). "Results of Nonlinear and Nonstationary Image Processing," *Information Processing in Scintigraphy*, Doc. CONF-730687, U.S.E.R.D.A. Technical Information Center, Oak Ridge, 1973.

(17) Jolley TM, SM Pizer (1973). "The Use of the Walsh Transform for Scintigram Enhancement," *Information Processing in Scintigraphy*, Doc. CONF-730687, U.S.E.R.D.A. Technical Information Center, Oak Ridge, 1973.

(16) *Pizer SM, Cohen M, L.A. Deveau, S. J. Harris, (1972). "Time-Shared Clinical Radioisotope Scan Collection, Processing and Retrieval," *Information Processing* **71**: 1536-1542. North Holland Publishing Company, Amsterdam, 1972.

(15) Brownell GL, SM Pizer, C.A. Burnham (1972). "NUMEDICS - A Computer System for Nuclear Medicine," *Radioaktive Isotope in Klinik und Forschung, Band X*, pp. 36-44. Urban and Schwarzenberg, Munich, 1972.

(14) * Pizer SM (1971). "Digital Spatial Filtering and Its Variations", *Quantitative Organ Visualization in Nuclear Medicine*, P. J. Kenny E. M. Smith, editors, pp. 581-603. University of Miami Press, Miami, 1971.

Stephen M. Pizer Curriculum Vitae

- (13) * Vetter HG, SM Pizer (1971). "A Measure for Radioisotope Scan Image Quality," *Journal of Nuclear Medicine*, **12**(7): 526-529, Jul. 1971.
- (12) * Metz CE, SM Pizer (1971). "Nonstationary and Nonlinear Scintigram Processing," *Proceedings of Second Conference on Data Handling and Image Processing in Scintigraphy*, Hannover, West Germany, Oct. 1971. A.E. Todd-Pokropek & E. Jahns, editors. Presented and accepted for publication, but never published.
- (11) *Pizer SM, Chesler DA, G.L. Brownell, (1971). "Physics Research Scan Processing Programs," *Proceedings Symposium Sharing Computer Programs and Technology in Nuclear Medicine*, pp. 89-97. F.H. Clark, B.F. Maskewitz, J. Gurney, M.W. Landay, editors. Doc. CONF-710425, U.S.A.E.C. Division of Technological Information, Oak Ridge, 1971.
- (10) *Pizer SM, Cohen M, L.A. Deveau, S.J. Harris, G.A. Hamlin, Jr. (1971). "CROSS, An Operating System for Time-Shared Scan Collection, Processing and Retrieval," *Proceedings Symposium Sharing Computer Programs and Technology in Nuclear Medicine*, pp. 215-225. F.H. Clark, B.F. Maskewitz, J. Gurney, M.W. Landay, editors. Doc. CONF-710425, U.S.A.E.C. Division of Technological Information, Oak Ridge, 1971.
- (9) *Pizer SM, Brownell GL, C.A. Burnham, S. Wilensky (1971). "NUMEDICS, A Computer System for Processing Radioisotope Data from Multiple Sources," *Proceedings Symposium of Sharing Computer Programs and Technology in Nuclear Medicine*, pp. 51-60. F.H. Clark, B.F. Maskewitz, J. Gurney, and M.W. Landay, editors. Doc. CONF-710425, U.S.A.E.C. Division of Technological Information, Oak Ridge, 1971.
- (8) *Vetter HG, SM Pizer (1970). "Perception of Quantum Limited Images," *Photogrammetric Engineering*, pp. 1179-1188, November 1970.
- (7) *Wilensky S, A.B. Ashare, SM Pizer, G.L. Brownell, & H. Littleboy (1969). "Computer Processing and Display of Radioisotope Scintigraphs," *Biomedical Science Instrumentation* 6, pp. 262-265. F.D. Thomas & E.E. Sellers, editors. Instrument Society of America, Pittsburgh, 1969.
- (6) *H.G. Vetter, SM Pizer. (1969). "Processing Radioisotope Scans," *Journal of Nuclear Medicine*, **10**(4): 150-154, Apr. 1969.
- (5) *Wilensky S, A.B. Ashare, B. Hoop, Jr., G.L. Brownell, SM Pizer (1969). "Computer Processing and Display of Positron Scintigrams and Dynamic Function Curves," *Medical Radioisotope Scintigraphy*, 1, pp. 815-827. I.A.E.A., Vienna, 1969.
- (4) *Pizer SM, H.G. Vetter (1968). * "Perception and Processing of Medical Radioisotope Scans," *Pictorial Pattern Recognition*, pp. 147-156. Thompson, Washington, 1968.
- (3) *Vetter HG, SM Pizer (1967). * "A Model for Perception of Quantum Limited Images and Its Application to Radioisotope Scanning," *Proceedings Seventh International Conference on Medical and Biological Engineering*, p. 113. Stockholm, 1967.
- (2) *Vetter HG, SM Pizer (1966). "The Problem of Display in the Visualization of Radioisotope Distributions," *Journal of Nuclear Medicine* **7**(10): 773-780. Oct. 1966.

Stephen M. Pizer
Curriculum Vitae

(1) *Pizer, SM. "Simulation of Radioisotope Scans by Computer," *Communications of ACM* 9, (5):358-362. May 1966.

TECHNICAL REPORTS

Foskey, M., Gash, A.G., Han, Q., Tracton, G., Joshi, S., Pizer, S., and Chaney, E. (2007). [A Software Toolkit for Multi-Image Registration and Segmentation in IGRT and ART.](#)

Merck, D., Pizer, S., and Rosenman, J. (2007). [Visualizing Anatomic Changes over Multi-Day Radiotherapy.](#)

Fridman, Y and SM Pizer (2004). Extracting the Geometry of Branching Slabs via Cores. University of North Carolina Computer Science technical report TR04-016. Submitted to CVAMIA 2004.

Yushkevich, P, S Joshi, S Pizer (2002). Feature Selection for Shape-Based Classification of Biological Objects. Submitted to CVPR 2003. Accepted at IPMI 2003.

Lu, C, S Pizer and S Joshi (2003). Multi-scale Shape Modeling by Markov Random Fields. Submitted to IPMI 2003.

Crouch, J, S Pizer, E Chaney, and M Zaider (2003). Medially Based Meshing with Finite Element Analysis of Prostate Deformation. Submitted to IPMI 2003.

Yushkevich, P, S Joshi, S Pizer, J Csernansky, and LE Wang (2003). Feature Selection for Shape-Based Classification of Biological Objects. Submitted to IPMI 2003.

Yushkevich, P, S Pizer, S Joshi, JS Marron (2001). Intuitive, Localized Analysis of Shape Variability. Submitted for IJCV Special UNC-MIDAG issue.

Godtliebsen F, JS Marron, SM Pizer (2001). Significance in Scale-Space for Clustering.

Fletcher T, SM Pizer, A Thall, AG Gash (2000). Shape Modeling and Image Visualization in 3D with M-rep Object Models. University of North Carolina Computer Science technical report TR01-004. Submitted to IPMI 2001.

Chen D, SM Pizer, T Whitted (1998). Using Multiscale Medial Models to Guide Volume Visualization. University of North Carolina Computer Science technical report TR99-014. Submitted to IEEE Visualization.

Yushkevich P, D Fritsch, SM Pizer, E Chaney (1998). Towards Automatic, Model-Driven Determination of 3D Patient Setup Errors in Conformal Radiotherapy. MICCAI Submission.

Stetten GD, SM Pizer (1998). Extracting Shape Properties via Populations of Medial Primitives. MICCAI Submission.

Stephen M. Pizer Curriculum Vitae

Aylward SR, JM Coggins, SM Pizer. Continuous mixture modeling via goodness-of-fit-ridges. University of North Carolina Computer Science Department technical report TR97-038

Chen D (1997). Volume rendering guided by multiscale medial models. University of North Carolina Computer Science Department technical report TR97-002, Doctorial Dissertation.

Pizer SM, E Bullitt, A Liu. "3D Image-Guided Surgery via Registration of Intraoperative and Preoperative Images." Invited (with promised publication) as keynote paper in *Conf. on Interactive Technology in Surgery and Medicine*, Leeds, UK, 1995. University of North Carolina Computer Science technical report TR95-040.

An Observer Study Testing the Clinical Utility of the Digital Enhancement of Radiotherapy Verification Films", co author C. Roe, K. Muller, J. Rosenman, R. Cromartie, S. Pizer. UNC TR93-023.

* "Image Object Description Without Explicit Edge-Finding", co-author with J. Coggins, D. Fritsch, B. Morse. UNC Technical Report #91-049, 1991.

"Standardization of Electronic Display Devices Based on Human Perception," co-author with R. C. Cromartie, R. E. Johnston, and D. C. Rogers. UNC TR88-002, 1987.

"Objects, Boundaries, and Medical Image Analysis," S. M. Pizer, D. Eberly, D. S. Fritsch. UNC Computer Science Department TR94-069.

Eberly D, RB Gardner, BS Morse, SM Pizer (1994). The differential geometry of scale space. University of North Carolina Computer Science Department technical report TR93-056, 1994.

Pizer, S. M., Eberly, D., Fritsch, D. S. (1994). Objects, Boundaries, and Medical Image Analysis. University of North Carolina Computer Science Department technical report TR94-069.

Liu, A., Bullitt, E., Pizer, S. M., 3D/2D Registration Using Cores of Tubular Anatomical Structures as a Basis. University of North Carolina Computer Science Department technical report.

Morse B, C. Burbeck, SM Pizer (1992). "A Hough-Like Medial Axis Response Function". UNC Technical Report TR91-044, January 1992.

*Pizer SM, J.M. Coggins, D.S. Fritsch, B.S. Morse (1992). "Image Object Description Without Explicit Edge-Finding". TR91-049, November, 1991. Submitted to the *Second European Conference on Computer Vision (ECCV)*, 1992.

*Cromartie R, J. Rosenman, and C. Roe, SM Pizer (1992). "Edge-limited Contrast Enhancement and its Clinical Effectiveness for Radiation Therapy Portal Films". UNC TR91-000. Submitted to *IEEE Trans. Med. Img.*, 1992.

*Pizer, S. M., Bullitt, E., Liu, A. (1995). 3D Image-guided surgery via registration of intraoperative and preoperative images. Keynote paper Conf. on Interactive Technology in Surgery and Medicine, Leeds, U.K. TR95-040.

Stephen M. Pizer
Curriculum Vitae

EXHIBITS AND POSTERS

Pizer S, S Joshi, PT Fletcher, M Styner, G Tracton, Z Chen, E Chaney (2001). Segmentation of Single-Figure Objects by Deformable M-reps. Displayed at *Medical Image Computing and Computer-Assisted Intervention (MICCAI 2001)*.

Crouch J, SM Pizer, E Chaney, Zaider M (2001). *Elastic Registration of Prostate Images Using the Finite Element Method with M-Rep Models*. Displayed at Cancer Care workshop in California, February 2001.

Tree 3D: Fast and Effective Visualization of Vessels Aneurysms, Bronchial Tubes and Bone from 3D Medial Data. Aylward S, SM Pizer. Accepted for presentation at the 84th annual meeting of the Radiological Society of North America held November 29 - December 4 1998

Yoo T, U Neuman, H Fuchs, SM Pizer, T Cullip, J Rhoades, R Whitaker (1991). "Methods for Direct Visualization of 3D Volume Data". UNC TR#91-011. Poster at *Information Processing in Medical Image (IPMI XII)*, 1991.

Volume Visualization in Radiation Treatment Planning Hologram, RSNA, November, 1989

Visual Threshold as a Function of Dynamic Range and Noise in CT Images, co-author with V. Klymenko, R. E. Johnston. West Image Perception Conference, October, 1989.

A Non-parametric Adaptive Method for Rapid Threshold Estimation in Visual Sensitivity Experiments with Medical Images, co-author with V. Klymenko, R. E. Johnston. West Image Perception Conference, October, 1989.

Three-Dimensional Display Methods for Image Data Obtained with SPECT, co-author with B.M.W. Tsui, J.L. Hendricks, J.R. Perry, V.L. Interrante, H. Fuchs, W.H. McCartney.

European Association of Nuclear Medicine Congress, August 28-September 1, 1989, Strasbourg, France.

Images to Graphics. ACM SIGGRAPH, July 1989

Contrast Limited Adaptive Histogram Equalization of Radiotherapy Films, co-author with H. McMurry, E. Chaney, G. Sherouse, J. Rosenman, and M. Varia. American Association of Physicists in Medicine, National Meeting, 1986.

Clinical Assessment of Intensity Windowing and Adaptive Histogram Equalization, co-author with H.D. Safrit, J.R. Perry, E.V. Staab, R.E. Johnston, A. Geselowitz, and R.C. Cromartie. Exhibit at 34th Annual Meeting of American University Radiologists, Farmington Conn., May 4-9, 1986.

Recent Developments in Adaptive Histogram Equalization, co-author with B. M. ter Haar Romeny, K. Zuiderveld, J. B. Zimmerman, P. Amburn, A. Geselowitz, P. F. G. M. van Waes, and A. de Goffau, 71st Scientific Assembly and Annual Meeting -- Radiological Society of North America, Chicago, Illinois, November 17-22, 1985.

Stephen M. Pizer
Curriculum Vitae

3D Reconstruction of the Carotid Artery from Serial Thin Transverse CT Sections of the Neck Utilizing the Varifocal Mirror Principle, co-author with E. Ralph Heinz, H. Fuchs, L.D. Tsai, D. Osborne, S. Bloomberg, and B.P. Drayer, XII Symposium Neuroradiologicum, Washington, D.C., October 10-16, 1982.

PUBLISHED BOOK REVIEWS

Statistical Shape Analysis, IL Dryden, KV Mardia, Wiley, New York, 1998. *Journal of statistical planning and inference* 84 (2000) 345-346.

*Review of *Solid Shape*, Jan J. Koenderink, MIT Press, 1990. *American Scientist* 79: 373-74, 1991.

*Review of *Graphic Languages*, F. Nacke, A. Rosenfeld, editors. North Holland Publishing Company, Amsterdam 1972. Co-author with J.D. Foley, *Computer Graphics and Image Processing* 1, 1973, pp. 196-201.

THESIS

Production and Processing of Radioisotope Scans, Doctoral Dissertation, Harvard University, July 1967.

PUBLISHED ABSTRACTS or ABSTRACTS IN REVIEW

D. Merck, T. J. Cullip, G. S. Tracton, S. M. Pizer, S. X. Chang, J. Rosenman. Interactive 3D Visualization for Radiation Treatment Planning [abstract]. In: Cancer Imaging and Radiation Therapy Symposium (ASTRO/RSNA), Atlanta, GA, April 2011.

C. Chou, B. Frederick, S. Pizer, S. Chang (2010), IGRT Via Machine Learning from Limited Angle Projection Images, *Med. Phys.* 37, 3332.

Chen-Rui Chou, C. Brandon Frederick, Sha Chang, and Stephen M. Pizer (2010). A learning-based patient repositioning method from limited-angle projections.

Xiaoxiao Lio, Bradley C. Davis, Marc Niethammer, Stephen M. Pizer, and Gig R. Mageras (2010). Prediction-driven Respiratory Motion Atlas Formation for 4D Image-guided Radiation Therapy in Lung. *Submitted to MICCAI'10 Pulmonary Image Analysis Workshop*.

Sungkyu Jung, Xiaoxiao Liu, J. S. Marron and Stephen M. Pizer (2010). Generalized PCA via the backward stepwise approach in image analysis.

Chaney, E, SM Pizer, S Joshi, R Broadhurst, PT Fletcher, G Gash, Q Han, JY Jeong, C Lu, D Merck, J Stough, and G Tracton (2004). Automatic Male Pelvis Segmentation from CT Images via Statistically Trained Multi-Object Deformable M-rep Models. *Submitted to 45th Annual Meeting of the American Society for Therapeutic Radiology and Oncology (ASTRO)*.

Chaney, E and SM Pizer (2002). Pablo: Clinical Prototype Software for Automatic Image Segmentation of Normal Anatomical Structures using Medially Based Deformable Models. 44th Annual Meeting of the American Society for Therapeutic Radiology and Oncology (ASTRO).

Stephen M. Pizer
Curriculum Vitae

Pizer, SM, "Figural Coordinates and the Associated Non-Euclidean Geometry," *In Proceedings of the 966th American Mathematical Society Meeting*, 2001, p. 47.

Fritsch, D.S., Liyun Yu, Valen Johnson, Matthew McAuliffe, Stephen Pizer, and Edward Chaney (1996). A Probabilistic Approach Using Deformable Organ Models for Automatic Definition of Normal Anatomical Structures For 3d Treatment Planning, Proc. ASTRO

"3D Reconstruction of Intracerebral Vasculature from Biplane Angiograms and MRA", E. Bullitt, M. Soltys, D. Fritsch, D. Eberly, A. Boxwala, J. Rosenman, S.M. Pizer. To appear *Neurosurgical Society of America*, June 1995.

"A Realtime Interactive Three Dimensional Visualization System for Temporal Bone Surgical Planning", co-author with V. N. Carrasco, M. S. Soltys, S. Mukherji, J. G. Rosenman. *The American Laryngological, Rhinological, and Otological Society, Inc. (The Triological Society)*, Annual Meeting, 1994.

"Object Representation by Cores", C. A. Burbeck, S. M. Pizer. Poster. Abstract # xx *Association for Research in Vision and Ophthalmology*, 1994.

"A Mammographic Contrast Enhancement Method", D.T. Puff, E. D. Pisano, R. E. Johnston, B. M. Hemminger, K. Muller, R. McLelland, C. A. Burbeck, and S.M.Pizer. *Inv. Radiol.*, 27(12), p1100, 1992.

"Medical Image Segmentation via Ridge-Related Image Description"., co-author with R. Whitaker, B. Morse, D. Fritsch, and J. Coggins. *The Journal of the Biomedical Engineering Society*, Vol. 19(5), p. 611, 1991.

"The Use of Contrast-Limited AHE to Improve The Contrast of Radiotherapy Films," co-author with J. Rosenman, H. McMurry, G. Sherouse, and E. Chaney. *Int. J. Radiat. Onc. Bio. Phys.*, 12 , p. 184, 1986.

"Ambient Light and Brightness Discrimination with Video Displays," co-author with R.E. Johnston, and D.C. Rogers. *Proc. Farwest Image Perception Conference*, Albuquerque, NM, July, 1986.

"Development of and Experience with a Prototype Medical Image Display", co-author with D.C. Rogers, R.E. Johnston, and B.M. Hemminger. *Proc. Farwest Image Perception Conference*, Albuquerque, NM, July, 1986.

"Factors in Display Design", to appear in Proc. *NIH Workshop on the Perception of Displayed Medical Information*, April 1985.

"Multiterminal Time-Shared System for Clinical Nuclear Studies: Operating System", co-author with L.A. Deveau, M. Cohen, S.J. Harris, G.A. Hamlin, Jr. *Journal of Nuclear Medicine* 12, (6), pp. 456-457. June 1971.

"Multiterminal Time-Shared System for Clinical Nuclear Studies: Hardware Design", co-author with G.L. Brownell, C.A. Burnham, S. Wilensky. *Journal of Nuclear Medicine* 12 (6), pp. 421-422. June 1971.

"Scintigram Display System", co-author with S. Wilensky, R. Humes, G.L. Brownell, H. Littleboy. *Journal of Nuclear Medicine* 10 (6), pp. 381-382. June 1969.

Stephen M. Pizer
Curriculum Vitae

"A Hybrid Display System for Computer Processed Scintigrams", co-author with S. Wilensky, G.L. Brownell, R. Humes, H. Littleboy. *Abstracts of Second International Conference on Medical Physics*. Boston, August 1969.

"A Computer System for Radioisotope Scanning", co-author with S. Wilensky G.L. Brownell. *Proc. Twelfth International Congress of Radiology*. Tokyo, October 1969.

"Computer Processing and Display of Radioisotope Scans", *Abstracts of Sixth Annual Symposium on Biomathematics and Computer Science in Life Sciences*. Houston, March 1968.

"Interfacing of Scanner and Computer", co-author with S. Wilensky, A.B. Ashare, S. Aronow, H. Littleboy, L. Boynton, G.L. Brownell. *Abstracts of Sixth Annual Symposium on Biomathematics and Computer Science in Life Sciences*. Houston, March 1968.

"Fourier Analysis of Tracer Data", co-author with A.B. Ashare & G.L. Brownell. *Abstracts of Sixth Annual Symposium on Biomathematics and Computer Science in Life Sciences*. Houston, March 1968.

"Processing and Display of Radioisotope Data", co-author with S. Wilensky, A.B. Ashare, C.A. Burnham, S. Aronow, G.L. Brownell. *Journal of Nuclear Medicine*, and talk given by Dr. Wilensky at 15th Annual Meeting of Society of Nuclear Medicine. Saint Louis, June 1968.

"Transform Analysis of Compartmental Models", co-author with A.B. Ashare G.L. Brownell. *Journal of Nuclear Medicine* 9(6), p. 365. 1968.

WRITTEN SUMMARIES OF CONFERENCE SESSIONS CHAIRED

Session on Systems, *Traitement Des Informations en Imagerie Medicale* (Information Processing in Medical Imaging), R. DiPaola and E. Kahn, eds., Editions INSERM, Paris, 1980, pp. 499, 512, 533-534, 546, 558.

IAEA Image Processing Intercomparison (a discussion) *Information Processing in Medical Imaging*, (Proc. IPMI5, Nashville, Tennessee, June 1977), p. 279, ORNL/BCTIC-2, U.S. Department of Commerce, Springfield, VA, 1978.

Session on Command Languages (a discussion), *Information Processing in Medical Imaging*, (Proc. IPMI5, Nashville, Tennessee, June 1977), p. 468, ORNL/BCTIC-2, U.S. Department of Commerce, Springfield, VA, 1978.

Session on Systems, p. 243, *Information Processing in Scintigraphy*, Orsay, France, July 1975, Commissariat a l'Energie Atomique, Dept. de Biologie, Service Hospitalier Frederic Joliot, Orsay, France, March 1976.

Session V. Speed Improvement in Image Processing, pp. 189-190, *Information Processing in Scintigraphy*. Doc. CONF-730687, U.S.E.R.D.A. Technical Information Center, Oak Ridge, 1973.

INVITED PRESENTATIONS (very partial list, unpublished)

Stephen M. Pizer
Curriculum Vitae

Report of the Working Group on Digital Mammography: Computer-Aided Diagnosis and 3D Image Analysis and Display, October 8-9, 1998 Cambridge, MA. Sponsored by the US. Public Health Service's Office of Women's Health and National Cancer Institute.

Johns Hopkins University, Dept. of Computer Science, Distinguished Speaker talk, 1998.

Brigham & Womens Hospital, Dept. of Radiology, Grand Rounds, 1998.

Georgia Tech, GVU Center, Distinguished Speaker talk

Yale University, 2 talks

"Imaging Science and Technology of the Future", Radiology Centennial Commemorative Conference, May 4-5, 1995, National Library of Medicine Auditorium, National Institutes of Health, Bethesda, MD. Sponsors: Food and Drug Administration, National Cancer Institute, Society of Breast Imaging, Society of Chairmen of Academic Radiology Departments.

"3D Image-Guided Surgery via Registration of Intraoperative and Preoperative Images", S.M. Pizer, E. Bullitt, A. Liu. Keynote speaker at International State of the Art Course, Conference and Workshop, *Interactive Technology in Surgery and Medicine*, March 9-11, 1995, Bodington Hall, Leeds, UK. Co-sponsored by: Royal College of Physicians, Royal College of Surgeons of England, British Computer Society, Virtual Reality Society, CGS, SMIT.

"If the Object's Your Objective", Banquet talk at SPIE Mathematical Methods in Medical Imaging II, San Diego, California, July 1993.

"Human Perception and Computer Image Analysis of Objects in Images", S. M. Pizer, C. A. Burbeck, D. S. Fritch. *Proc. Conference of the Australia Pattern Recognition Society (DICTA)*, 1993.

"A Vision of Vision: Integrations Between Human and Computer Vision", Dedication of Utrecht Biophysics Institute, Utrecht, The Netherlands, October 23, 1990.

Multiscale, Geometric Image Descriptions for Interactive Object Definition", Symposium of the German Association for Pattern Recognition, DAGM - Symposium Mustererkennung '89, October 1989.

"Three-Dimensional Display of Medical and Other Volume Images", Half-day tutorial, SPIE/EPS/Europtica International Congress on Optical Science and Engineering, April 1989.

"The Radiology Display Station as a Computer/Human Interface", Frontiers of Radiology, Dedication of Radiological Sciences Building, Univ. of Arizona, February 1988.

"Display Approaches for Nuclear Medicine," Fourth Northeast Regional Scientific Meeting: Society of Nuclear Medicine, November 1988.

"Medical Image Workstations: State of Science and Technology," co-author with D.V. Beard. ACR Workshop on Visualization Science in Engineering and Computing, April 1988.

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Curriculum Vitae

"Image Description via Annihilation of Essential Structures," Fourth Copenhagen Workshop in Computational Vision Multi-Resolution Representation of Images, Copenhagen, November 23-26, 1987.

"Effective Presentation of Medical Images," AAAS Annual Meeting, Chicago, February 1987.

"Three-dimensional Image Display Presentation", Problems in Functional Image Analysis: Workshop I, November 1984.

"Varifocal Mirror Display Method", First Annual Meeting, Society of Magnetic Resonance in Medicine, August 1982.

"Varifocal Mirror Display of Organ Surfaces from CT Scans", Institute for Graphics Communication, Third Annual Conference on 3-D Display Techniques, Carmel, May 1982.

"Perception, Presentation and Contrast Control in Nuclear Medicine Image Displays", Symposium on the Principles of Perception, 1981 Conjoint Winter Conference, Society of Nuclear Medicine, New Orleans, February 1981.

"The State of the Art of Digital Image Display Technology for Nuclear Medicine", Symposium on Image Production and Perception, Society of Nuclear Medicine Instrumentation Council, Arlington, Va., May 1980.

"Interactive Display Processing: Directions and Needs for Nuclear Medicine Tasks", Society of Nuclear Medicine Computer Council Workshop on Computers in Nuclear Medicine, IEEE 79 Nuclear Science Symposium, San Francisco, October 1979.

"Intensity Representation and Mapping for Medical Displays", Conference on Visual Psychophysics and Medical Imaging, New Haven, September 1979.

"Methods and Limitations of Edge Detection for Noisy Images", co-author with Lee R. Nackman, Society of Nuclear Medicine Annual Meeting, Atlanta, June 1979.

"Heated Object Spectrum Color Display", co-author with F.H. Chan, poster paper, World Federation of Nuclear Medicine and Biology, Washington, D.C., September 1978.

"Digital Image Display", in session entitled 'Is there a computer in your future?',

Federation of American Societies in Experimental Biology, Atlantic City, New Jersey, April 10, 1978.

"Noise Character in Processed Scintigrams", in session on Noise and Its Relation to Image Quality, 23rd Annual Meeting of the Society of Nuclear Medicine, Dallas, June 1976.

"Usefulness of Computer Processing of Scintigrams", Hospital Physicists Association Annual Conference, Aberdeen, Scotland, 10 September 1973.

Stephen M. Pizer
Curriculum Vitae

DISSERTATIONS SUPERVISED AS PRINCIPAL OR CO-PRINCIPAL ADVISOR

Completed

PhDs

David McAllister, 1972
Truman Jolley, 1972
Lee Nackman, 1982
Francis Chan, BME, 1982
George Konstantinow BME, 1983
John Zimmerman, 1985
J. Michael Fitzpatrick
Larry Lifshitz, 1987
Cheng-Hong Hsieh, 1989
Marc Levoy 1989
John Gauch, 1989
Wei-Jyh Lin, 1991
R. Eric Fredericksen, 1993
Ross Whitaker, 1993
Johnny Rhoades, 1993
David Banks, 1993
Daniel Fritsch, BME, 1993
David Eberly, 1994
Derek Puff BME, 1995
Bryan Morse, 1995
Robert Cromartie, 1995
Terry Yoo, 1996
Victoria Interrante, 1996
Alan Liu, 1998
David Chen, 1998
Jacob Furst, 1999
George Stetten, BME 1999
Bradley Hemminger, 2001
Robert Katz, 2002
Peter Brown, 2002 (chairman and assistant supervisor)
Paul Yushkevich, 2003
Gregory Clary, 2003
Jessica Crouch, 2003
Erik Dam (co-supervised), 2003
Andrew Thall, 2004
Yonatan Fridman, 2004
Tom Fletcher, 2004
Qiong Han, 2008
Joshua Stough, 2008
Ja Yeon Jeong, 2008
Robert Broadhurst, 2008
Joshua Levy, 2008

**Progress made, but not
completed**

MS, some PhD research

Sandra Bloomberg

William Oliver

Eliza Graves

Chenwei Gu

Kah-Chan Low

Leslie Levine Willis, stopped at MS, 2002

Zhi (James) Chen

**Stephen M. Pizer
Curriculum Vitae**

Derek Merck, 2009

Xiaoxiao Liu, 2010

Rohit Saboo, 2011

Ilknur Kaynar-Kabul, 2012

Chen-Rui Chou, 2013

C. Brandon Frederick, BME, 2013

Jörn Schulz, U of Tromsø

Juan Carlos Prieto, INSA-Lyon

Xiaojie Zhao, MS 2012

In progress

Jared Vicory

Hina Shah

Qingyu Zhao

Chong Shao